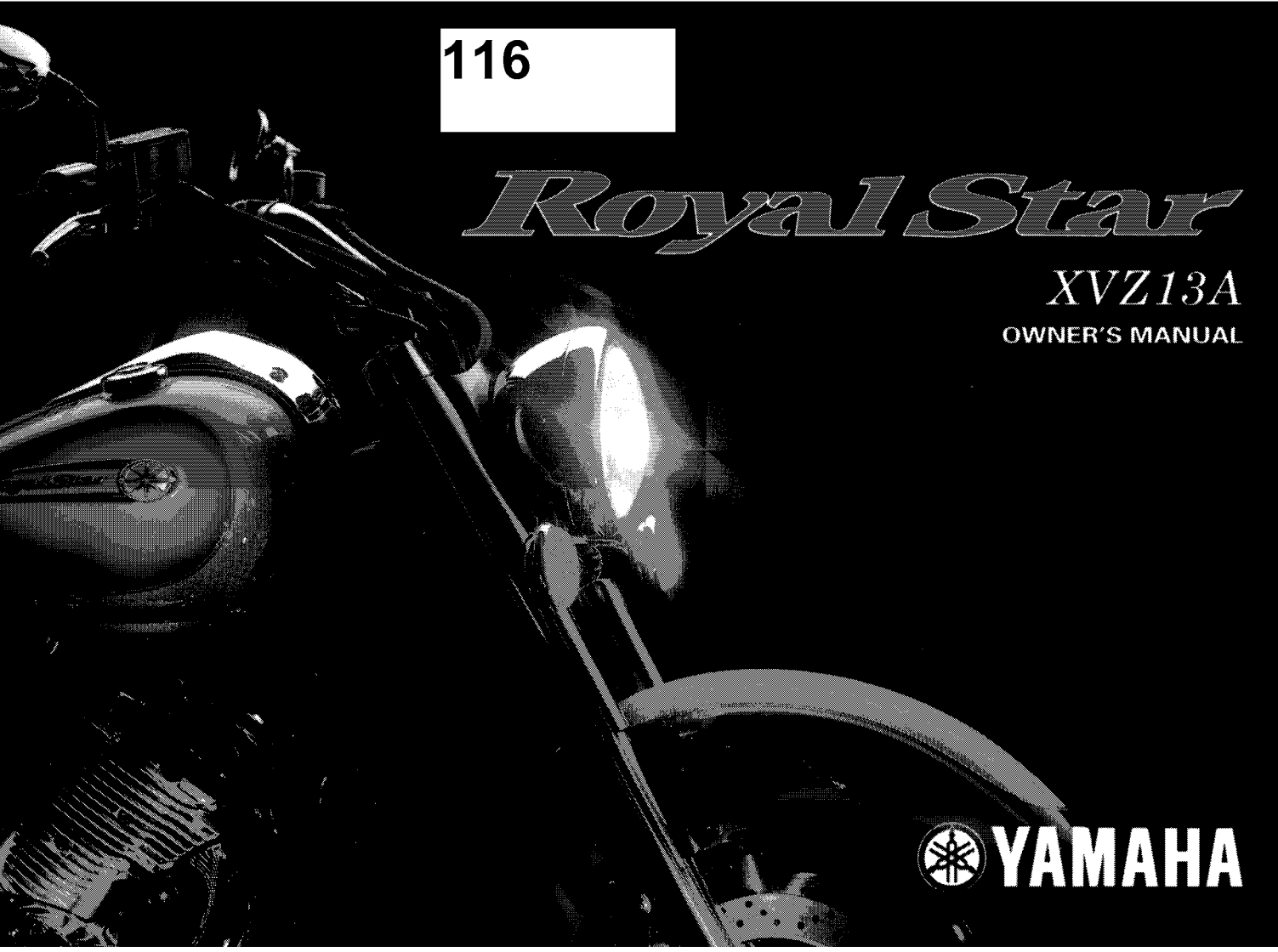
116

Royal Star

XVZ13A

OWNER'S MANUAL



YAMAHA

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

YAMAHA LIT-CALIF-65-01

Congratulations on your purchase of the Yamaha Royal Star™. This model is the result of Yamaha's vast experience in the production of fine sporting, touring, and pacesetting racing machines. It represents the high degree of craftsmanship and reliability that have made Yamaha a leader in these fields.

This manual will give you an understanding of the operation, inspection, and basic maintenance of this motorcycle. If you have any questions concerning the operation or maintenance of your motorcycle, please consult a Yamaha dealer.

The design and manufacture of this Yamaha motorcycle fully comply with the emissions standards for clean air applicable at the date of manufacture. Yamaha has met these standards without reducing the performance or economy of operation of the motorcycle. To maintain these high standards, it is important that you and your Yamaha dealer pay close attention to the recommended maintenance schedules and operating instructions contained within this manual.

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following notations:

⚠	**The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**
⚠ WARNING	**Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander or a person inspecting or repairing the motorcycle.**
CAUTION:	**A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.**
NOTE:	A NOTE provides key information to make procedures easier or clearer.

NOTE:

- This manual should be considered a permanent part of this motorcycle and should remain with it even if the motorcycle is subsequently sold.
- Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your motorcycle and this manual. If you have any questions concerning this manual, please consult your Yamaha dealer.

⚠ WARNING

PLEASE READ THIS MANUAL AND THE "YOU AND YOUR MOTORCYCLE: RIDING TIPS" BOOKLET CAREFULLY AND COMPLETELY BEFORE OPERATING THIS MOTORCYCLE. DO NOT ATTEMPT TO OPERATE THIS MOTORCYCLE UNTIL YOU HAVE ATTAINED ADEQUATE KNOWLEDGE OF ITS CONTROLS AND OPERATING FEATURES AND UNTIL YOU HAVE BEEN TRAINED IN SAFE AND PROPER RIDING TECHNIQUES. REGULAR INSPECTIONS AND CAREFUL MAINTENANCE, ALONG WITH GOOD RIDING SKILLS, WILL ENSURE THAT YOU SAFELY ENJOY THE CAPABILITIES AND THE RELIABILITY OF THIS MOTORCYCLE.

IMPORTANT MANUAL INFORMATION

AFFIX DEALER

LABEL HERE

XVZ1300AN(C)
OWNER'S MANUAL
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⚠ SAFETY INFORMATION

MOTORCYCLES ARE SINGLE TRACK VEHICLES. THEIR SAFE USE AND OPERATION ARE DEPENDENT UPON THE USE OF PROPER RIDING TECHNIQUES AS WELL AS THE EXPERTISE OF THE OPERATOR. EVERY OPERATOR SHOULD KNOW THE FOLLOWING REQUIREMENTS BEFORE RIDING THIS MOTORCYCLE.

HE OR SHE SHOULD:

1. OBTAIN THOROUGH INSTRUCTIONS FROM A COMPETENT SOURCE ON ALL ASPECTS OF MOTORCYCLE OPERATION.
2. OBSERVE THE WARNINGS AND MAINTENANCE REQUIREMENTS IN THE OWNER'S MANUAL.
3. OBTAIN QUALIFIED TRAINING IN SAFE AND PROPER RIDING TECHNIQUES.
4. OBTAIN PROFESSIONAL TECHNICAL SERVICE AS INDICATED BY THE OWNER'S MANUAL AND/OR WHEN MADE NECESSARY BY MECHANICAL CONDITIONS.

Safe riding

1. Always make pre-operation checks. Careful checks may help prevent an accident.
2. This motorcycle is designed to carry the operator and a passenger.
3. The failure of motorists to detect and recognize motorcycles in traffic is the predominating cause of automobile/motorcycle accidents. Many accidents have been caused by an automobile driver who did not see the motorcycle. Making yourself conspicuous appears to be very effective in reducing the chance of this type of accident.

Therefore:

   a. Wear a brightly colored jacket.
   b. Use extra caution when approaching and passing through intersections, since intersections are the most likely places for motorcycle accidents to occur.
   c. Ride where other motorists can see you. Avoid riding in another motorist's blind spot.

4. Many motorcycle accidents involve inexperienced operators. In fact, many operators who have been involved in accidents do not even have a current motorcycle license.
   a. Make sure that you are qualified and that you only lend your motorcycle to other qualified operators.
   b. Know your skills and limits. Staying within your limits may help you to avoid an accident.
   c. We recommend that you practice riding your motorcycle where there is no traffic until you have become thoroughly familiar with the motorcycle and all of its controls.
5. Many motorcycle accidents have been caused by error of the motorcycle operator. A typical error made by the operator is veering wide on a turn due to EXCESSIVE SPEED or undercornering (insufficient lean angle for the speed).
   a. Always obey the speed limit and never travel faster than warranted by road and traffic conditions.
   b. Always signal before turning or changing lanes. Make sure that other motorists can see you.
6. The posture of the operator and passenger is important for proper control.
   a. The operator should keep both hands on the handlebar and both feet on the operator footrests during operation to maintain control of the motorcycle.
   b. The passenger should always hold onto the operator, seat strap, or grab bar, if equipped, with both hands and keep both feet on the passenger footrests.
   c. Never carry a passenger unless he or she can firmly place both feet on the passenger footrests.
7. Never ride under the influence of alcohol or other drugs.
8. This motorcycle is designed for on-road use only, therefore, it is not suitable for off-road use.

Protective apparel

The majority of fatalities from motorcycle accidents are the result of head injuries. The use of a safety helmet is the single most critical factor in the prevention or reduction of head injuries.

1. Always wear an approved helmet.
2. Wear a face shield or goggles. Wind in your unprotected eyes could contribute to an impairment of vision which could delay seeing a hazard.
3. The use of a jacket, heavy boots, trousers, gloves, etc., is effective in preventing or reducing abrasions or lacerations.
4. Never wear loose-fitting clothes, otherwise they could catch on the control levers, footrests, or wheels and cause injury or an accident.
5. Never touch the engine or exhaust system during or after operation. They become very hot and can cause burns. Always wear protective clothing that covers your legs, ankles, and feet.
6. Passengers should also observe the precautions mentioned above.

Modifications

Modifications made to this motorcycle not approved by Yamaha, or the removal of original equipment, may render the motorcycle unsafe for use and may cause severe personal injury. Modifications may also make your motorcycle illegal to use.

Loading and accessories

Adding accessories or cargo to your motorcycle can adversely affect stability and handling if the weight distribution of the motorcycle is changed. To avoid the possibility of an accident, use extreme caution when adding cargo or accessories to your motorcycle. Use extra care when riding a motorcycle that has added cargo or accessories. Here are some general guidelines to follow if loading cargo or adding accessories to your motorcycle:

Loading

The total weight of the operator, passenger, accessories and cargo must not exceed the maximum load limit of 448 lb. (203 kg). When loading within this weight limit, keep the following in mind:

1. Cargo and accessory weight should be kept as low and close to the motorcycle as possible. Make sure to distribute the weight as evenly as possible on both sides of the motorcycle to minimize imbalance or instability.
2. Shifting weights can create a sudden imbalance. Make sure that accessories and cargo are securely attached to the motorcycle before riding. Check accessory mounts and cargo restraints frequently.
3. Never attach any large or heavy items to the handlebar, front fork, or front fender. These items, including such cargo as sleeping bags, duffel bags, or tents, can create unstable handling or slow steering response.

Accessories

Genuine Yamaha accessories have been specifically designed for use on this motorcycle. Since Yamaha cannot test all other accessories that may be available, you must personally be responsible for the proper selection, installation and use of non-Yamaha accessories. Use extreme caution when selecting and installing any accessories.
Keep the following guidelines in mind, as well as those provided under "Loading" when mounting accessories.

1. Never install accessories or carry cargo that would impair the performance of your motorcycle. Carefully inspect the accessory before using it to make sure that it does not in any way reduce ground clearance or cornering clearance, limit suspension travel, steering travel or control operation, or obscure lights or reflectors.

a. Accessories fitted to the handlebar or the front fork area can create instability due to improper weight distribution or aerodynamic changes. If accessories are added to the handlebar or front fork area, they must be as lightweight as possible and should be kept to a minimum.
b. Bulky or large accessories may seriously affect the stability of the motorcycle due to aerodynamic effects. Wind may attempt to lift the motorcycle, or the motorcycle may become unstable in cross winds. These accessories may also cause instability when passing or being passed by large vehicles.
c. Certain accessories can displace the operator from his or her normal riding position. This improper position limits the freedom of movement of the operator and may limit control ability, therefore, such accessories are not recommended.

2. Use caution when adding electrical accessories. If electrical accessories exceed the capacity of the motorcycle's electrical system, an electric failure could result, which could cause a dangerous loss of lights or engine power.

Gasoline and exhaust gas

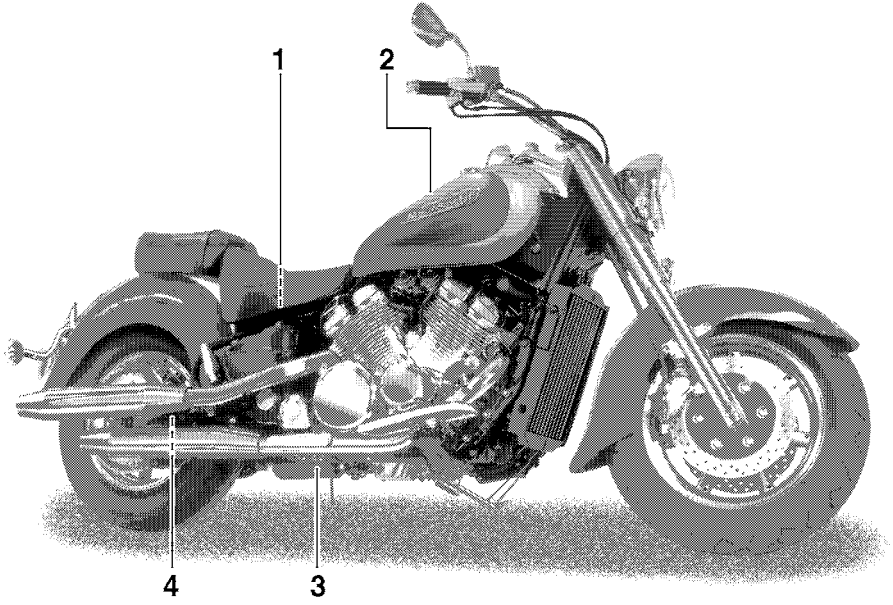
1. GASOLINE IS HIGHLY FLAMMABLE:
   a. Always turn the engine off when refueling.
   b. Take care not to spill any gasoline on the engine or exhaust system when refueling.
   c. Never refuel while smoking or in the vicinity of an open flame.
2. Never start the engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and may cause loss of consciousness and death within a short time. Always operate your motorcycle in an area that has adequate ventilation.
3. Always turn the engine off before leaving the motorcycle unattended and remove the key from the main switch. When parking the motorcycle, note the following:

a. The engine and exhaust system may be hot, therefore, park the motorcycle in a place where pedestrians or children are not likely to touch these hot areas.
b. Do not park the motorcycle on a slope or soft ground, otherwise it may fall over.
c. Do not park the motorcycle near a flammable source (e.g. a kerosene heater, or near an open flame), otherwise it could catch fire.

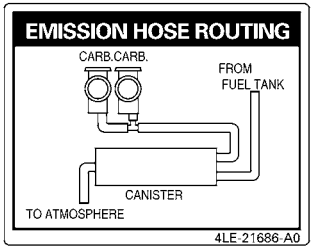
4. When transporting the motorcycle in another vehicle, make sure that it is kept upright and that the fuel cock is turned to "ON" or "RES" (for vacuum type) / "OFF" (for manual type). If it should lean over, gasoline may leak out of the carburetor or fuel tank.
5. If you should swallow any gasoline, inhale a lot of gasoline vapor, or allow gasoline to get into your eyes, see your doctor immediately. If any gasoline spills on your skin or clothing, immediately wash the affected area with soap and water and change your clothes.

Location of important labels

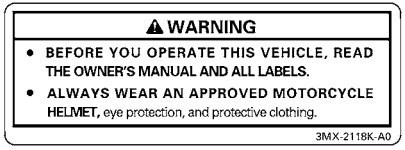
Please read the following important labels carefully before operating this motorcycle.



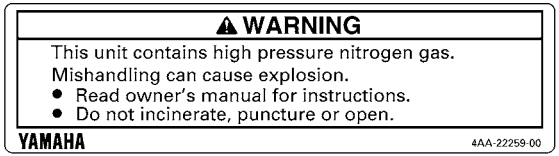
1 **California only**



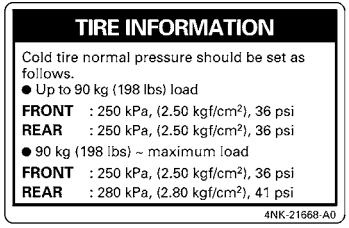
2


⚠ WARNING
• BEFORE YOU OPERATE THIS VEHICLE, READ THE OWNER'S MANUAL AND ALL LABELS.
• ALWAYS WEAR AN APPROVED MOTORCYCLE HELMET, eye protection, and protective clothing.
3MX-2118K-A0

3


⚠ WARNING
This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
• Read owner's manual for instructions.
• Do not incinerate, puncture or open.
YAMAHA
4AA-22259-00

4


TIRE INFORMATION
Cold tire normal pressure should be set as follows.
• Up to 90 kg (198 lbs) load
FRONT : 250 kPa, (2.50 kgf/cm²), 36 psi
REAR : 250 kPa, (2.50 kgf/cm²), 36 psi
• 90 kg (198 lbs) ~ maximum load
FRONT : 250 kPa, (2.50 kgf/cm²), 36 psi
REAR : 280 kPa, (2.80 kgf/cm²), 41 psi
4NK-21668-A0

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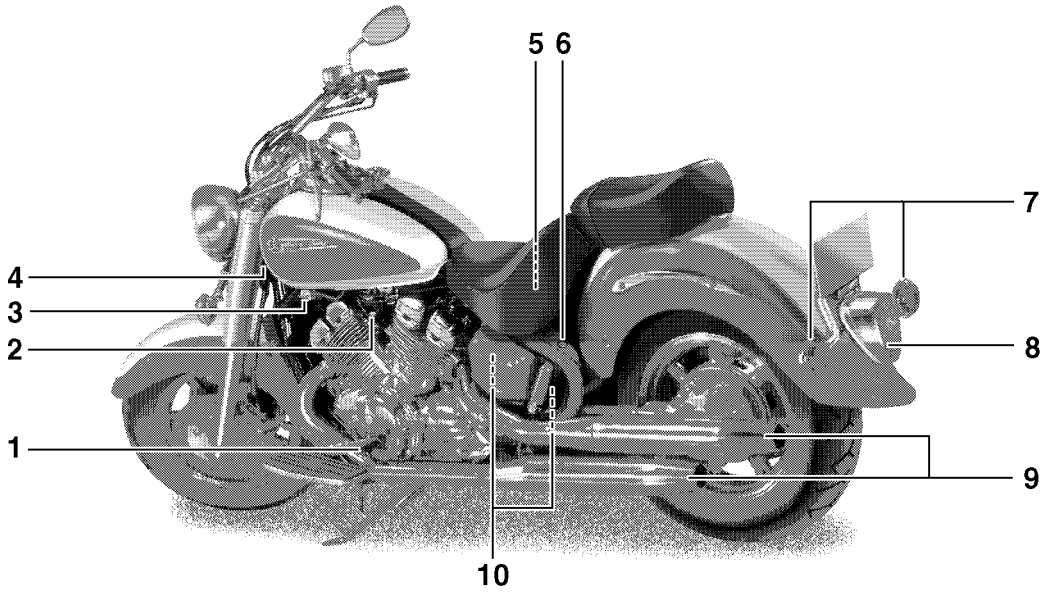
Right view 2-2
Controls and instruments 2-3

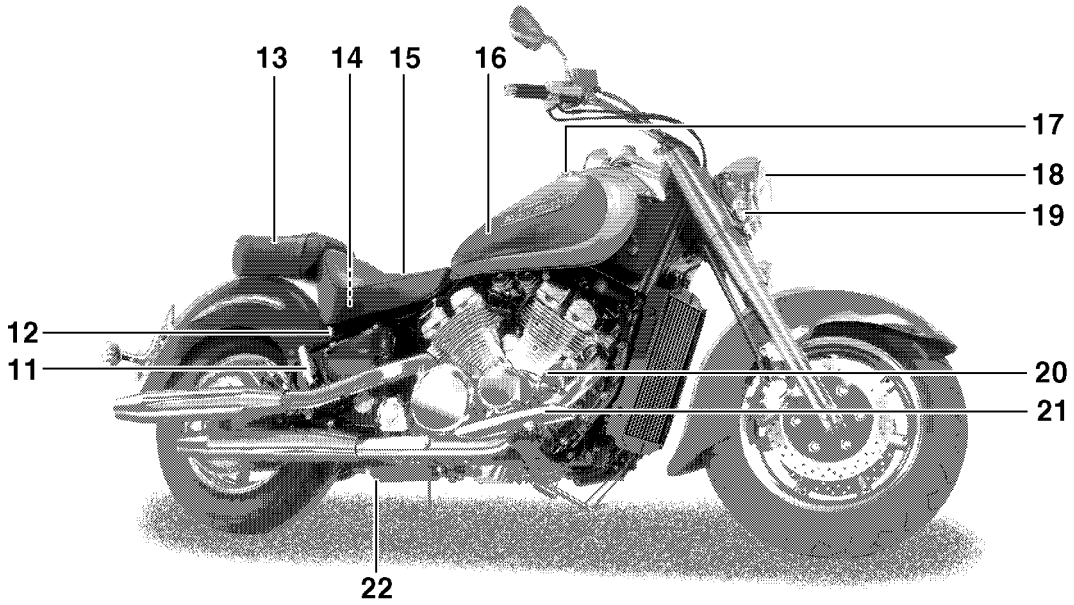
DESCRIPTION

Royal Star™
Left view



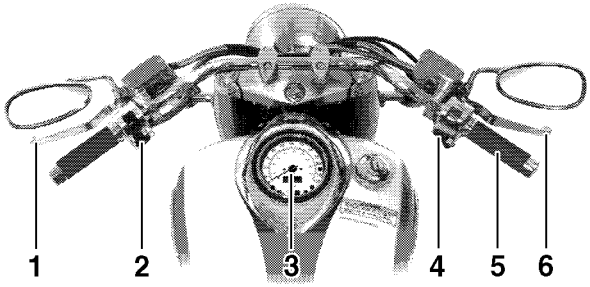
1. Shift pedal	(page 3-5)	6. Seat lock	(page 3-10)
2. Starter (choke) knob	(page 3-9)	7. Rear turn signal lights	(page 6-33)
3. Fuel cock	(page 3-8)	8. Tail/brake light	(page 6-33)
4. Steering lock	(page 3-9)	9. Mufflers	
5. Owner's tool kit	(page 6-2)	10. Fuses	(page 6-30)

Royal Star™
Right view



11. Passenger footrest
12. Main switch (page 3-1)
13. Passenger seat
14. Helmet holders (page 3-11)
15. Rider seat (page 3-10)
16. Fuel tank (page 3-6)
17. Fuel tank cap (page 3-6)
18. Headlight (page 6-31)
19. Front turn signal/position light (page 6-33)
20. Brake pedal (page 3-5)
21. Rider footrest
22. Shock absorber spring preroad adjusting nut (page 3-13)

Royal Star™
Controls and instruments



1. Clutch lever	(page 3-4)	4. Right handlebar switches	(page 3-4)
2. Left handlebar switches	(page 3-3)	5. Throttle grip	(page 6-17)
3. Speedometer unit	(page 3-3)	6. Brake lever	(page 3-5)

INSTRUMENT AND CONTROL FUNCTIONS

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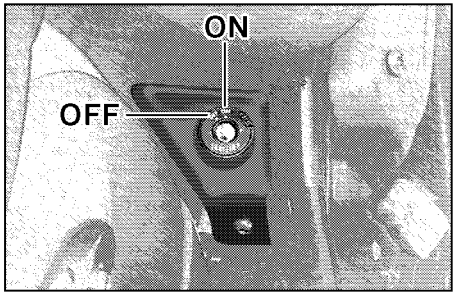
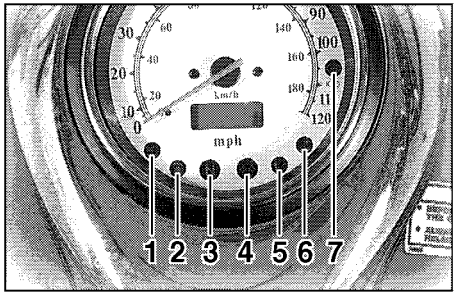
INSTRUMENT AND CONTROL FUNCTIONS





Main switch

The main switch controls the ignition and lighting systems. The various main switch positions are described below.

ON

All electrical systems are supplied with power, and the headlight, meter lighting, taillight and position lights come on, and the engine can be started. The key cannot be removed.

OFF

All electrical systems are off. The key can be removed.

Indicator and warning lights

1. High beam indicator light "≡D"

This indicator light comes on when the high beam of the headlight is switched on.

2. Fuel level warning light "⛽"

This warning light comes on when the fuel level drops below approximately 0.9 US gal (0.8 Imp gal, 3.5 L). When this occurs, turn the fuel cock lever to the "RES" position and refuel as soon as possible.

3. Neutral indicator light " N "

This indicator light comes on when the transmission is in the neutral position.

4. Turn signal indicator light "◁ ▷"

This indicator light flashes when the turn signal switch is pushed to the left or right.

5. Oil level warning light "🛢"

This warning light comes on when the engine oil level is low.

The electrical circuit of the warning light can be checked according to the following procedure.

1. Set the engine stop switch to "○" and turn the key to "ON".
2. Shift the transmission into the neutral position or pull the clutch lever.
3. Push the start switch. If the warning light does not come on while pushing the start switch, have a Yamaha dealer check the electrical circuit.

NOTE:
Even if the oil level is sufficient, the warning light may flicker when riding on a slope or during sudden acceleration or deceleration, but this is not a malfunction.

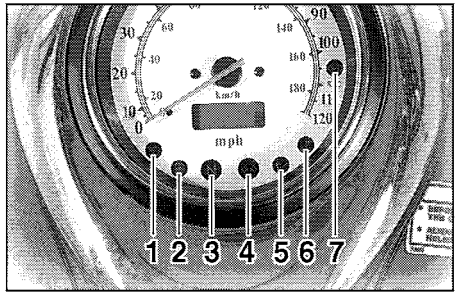
6. Coolant temperature warning light " "

This warning light comes on when the engine overheats. When this occurs, stop the engine immediately and allow the engine to cool.

The electrical circuit of the warning light can be checked according to the following procedure.

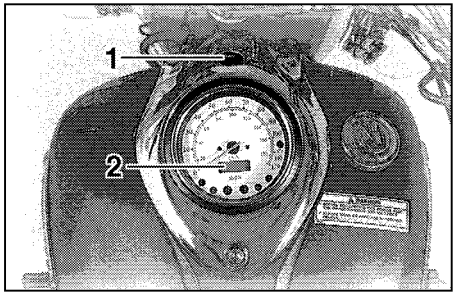
1. Set the engine stop switch to " " and turn the key to "ON".
2. Shift the transmission into the neutral position or pull the clutch lever.
3. Push the start switch. If the warning light does not come on while pushing the start switch, have a Yamaha dealer check the electrical circuit.

CAUTION:
Do not operate the engine if it is overheated.



7. Overdrive indicator light/Engine trouble warning light "O/D / "

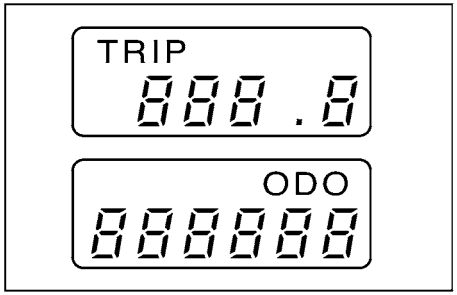
- This indicator/warning light will come on when the transmission is in overdrive (5th gear).
- This indicator/warning light will also come on or flash if trouble occurs in an engine monitoring circuit. In such a case, take the motorcycle to a Yamaha dealer to have the self-diagnostic systems checked.



1. "TRIP" button
2. Odometer/tripmeter

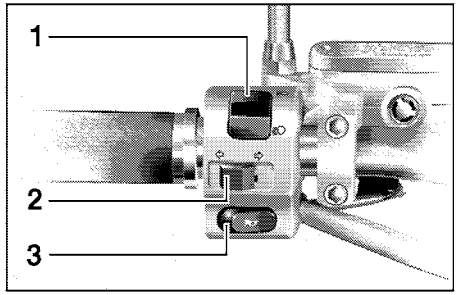
Speedometer unit

The speedometer unit is equipped with a digital odometer and a tripmeter. The speedometer shows riding speed. The odometer shows the total distance traveled. The tripmeter shows the distance traveled since it was last set to zero.
Pushing the "TRIP" button switches the display between the odometer mode "ODO" and the tripmeter mode "TRIP".



To reset the tripmeter, select it by pushing the "TRIP" button, and then push the "TRIP" button again and hold it down for at least one second. The tripmeter can be used to estimate the distance that can be traveled with a full tank of fuel. This information will enable you to plan future fuel stops.

NOTE:
This motorcycle is not equipped with a tachometer; however, it has a built-in speed limiter, which prevents the engine speed from exceeding approximately 6,000 r/min and the vehicle speed from exceeding approximately 112 mi/h (180 km/h).



Handlebar switches

1. Dimmer switch

Set this switch to "≡D" for the high beam and to "≡D" for the low beam.

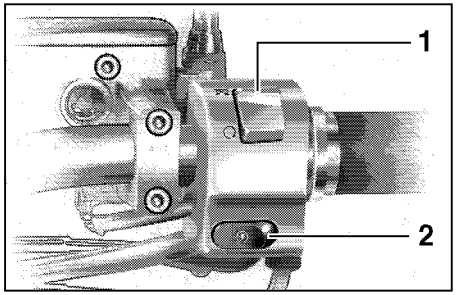
2. Turn signal switch

To signal a right-hand turn, push this switch to the right. To signal a left-hand turn, push this switch to the left. When released, the switch returns to the center position.
Since this model is equipped with a self-canceling system, the turn signal lights will self-cancel after the motor-

cycle has traveled both about 490 ft (150 m) and for approximately 15 seconds. However, the turn signal lights can also be canceled manually by pushing the switch in after it has returned to the center position.

NOTE:
The self-canceling system only operates when the motorcycle is moving, so that the turn signal lights will not self-cancel while you are stopped at an intersection.

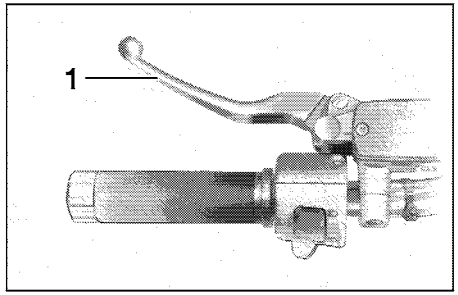
3. Horn switch "📯"
Press this switch to sound the horn.



1. Engine stop switch
Set this switch to "⊠" to stop the engine in case of an emergency, such as when the motorcycle overturns or when the throttle cable is stuck.

2. Start switch "🔘"
Push this switch to crank the engine with the starter.

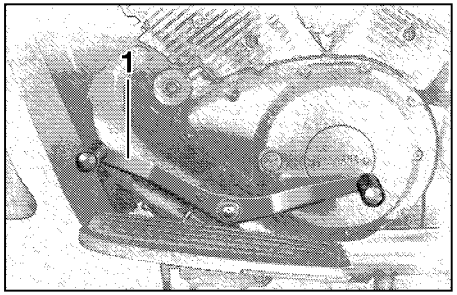
CAUTION:
See page 5-2 for starting instructions prior to starting the engine.



1. Clutch lever

Clutch lever

The clutch lever is located at the left handlebar grip. To disengage the clutch, pull the lever toward the handlebar grip. To engage the clutch, release the lever. The lever should be pulled rapidly and released slowly for smooth clutch operation.
The clutch lever is equipped with a clutch switch, which is part of the ignition circuit cut-off system. (See page 3-16 for an explanation of the ignition circuit cut-off system.)

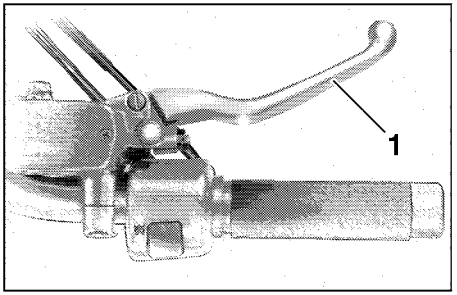


1. Shift pedal

Shift pedal

The shift pedal is located on the left side of the engine and is used in combination with the clutch lever when shifting the gears of the 5-speed constant-mesh transmission equipped on this motorcycle.

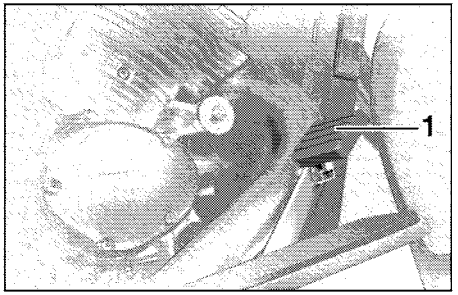
NOTE:
Use your toes or heel to shift up and your toes to shift down.



1. Brake lever

Brake lever

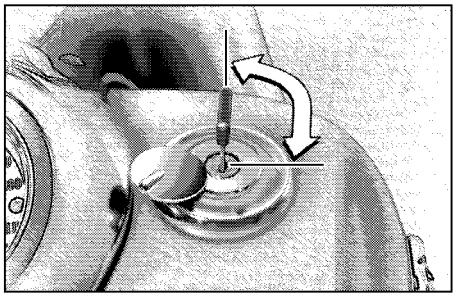
The brake lever is located at the right handlebar grip. To apply the front brake, pull the lever toward the handlebar grip.



1. Brake pedal

Brake pedal

The brake pedal is on the right side of the motorcycle. To apply the rear brake, press down on the brake pedal.



Fuel tank cap

To remove the fuel tank cap

Slide the lock cover open, insert the key into the lock, and then turn it 1/4 turn clockwise. The lock will be released and the fuel tank cap can be removed.

To install the fuel tank cap

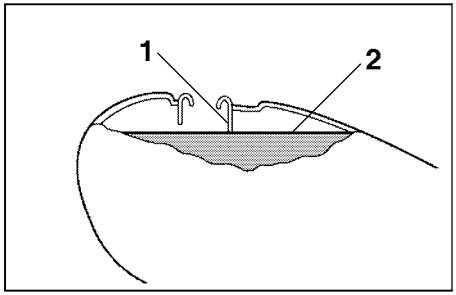
1. Insert the fuel tank cap into the tank opening with the key inserted in the lock and with the "△" mark facing forward.
2. Turn the key counterclockwise to the original position, remove it, and then close the lock cover.

NOTE:

The fuel tank cap cannot be installed unless the key is in the lock. In addition, the key cannot be removed if the cap is not properly installed and locked.

⚠ WARNING

Make sure that the fuel tank cap is properly installed before riding.



1. Fuel tank filler tube
2. Fuel level

Fuel

Make sure that there is sufficient fuel in the tank. Fill the fuel tank to the bottom of the filler tube as shown in the illustration.

⚠ WARNING

- **Do not overfill the fuel tank, otherwise it may overflow when the fuel warms up and expands.**
- **Avoid spilling fuel on the hot engine.**

CAUTION:

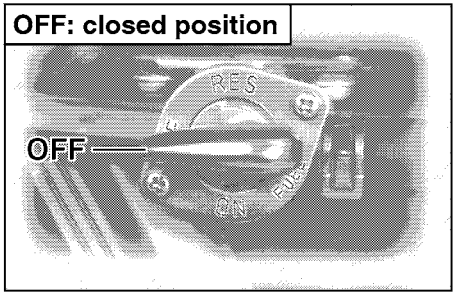
Immediately wipe off spilled fuel with a clean, dry, soft cloth, since fuel may deteriorate painted surfaces or plastic parts.

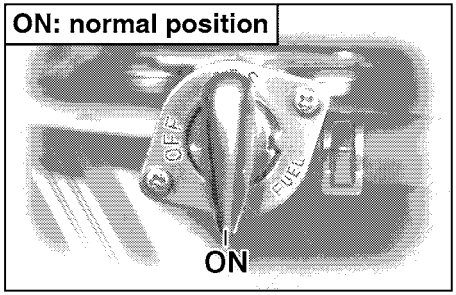
Recommended fuel:
UNLEADED FUEL
Fuel tank capacity:
Total amount:
4.8 US gal (4.0 Imp gal, 18 L)
Reserve amount:
0.9 US gal (0.8 Imp gal, 3.5 L)

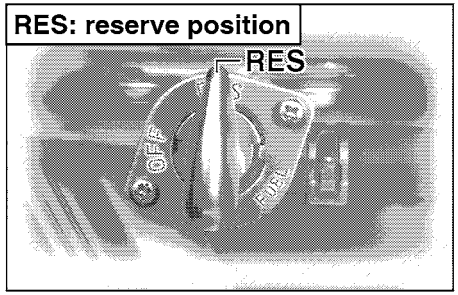
Your Yamaha engine has been designed to use regular unleaded gasoline with a pump octane number [(R+M)/2] of 86 or higher, or a research octane number of 91 or higher. If knocking (or pinging) occurs, use a gasoline of a different brand or premium unleaded fuel. Use of unleaded fuel will extend spark plug life and reduce maintenance costs. If unleaded gasoline is not available, then leaded regular gasoline can be used.

Gasohol

There are two types of gasohol: gasohol containing ethanol and that containing methanol. Gasohol containing ethanol can be used if the ethanol content does not exceed 10%. Gasohol containing methanol is not recommended by Yamaha because it can cause damage to the fuel system or vehicle performance problems.







Fuel cock

The fuel cock supplies fuel from the tank to the carburetors while also filtering it.

The fuel cock lever positions are explained as follows and shown in the illustrations.

OFF

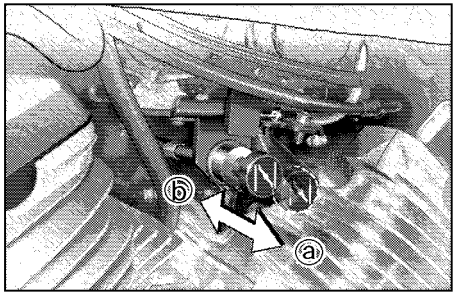
With the fuel cock lever in this position, fuel will not flow. Always turn the fuel cock lever to this position when the engine is not running.

ON

With the fuel cock lever in this position, fuel flows to the carburetors. Turn the fuel cock lever to this position when starting the engine and riding.

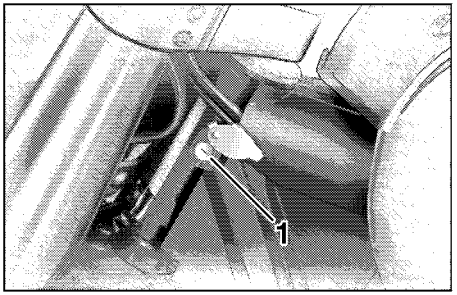
RES

This indicates reserve. With the fuel cock lever in this position, the fuel reserve is made available. Turn the fuel cock lever to this position if you run out of fuel while riding. When this occurs, refuel as soon as possible and be sure to turn the fuel cock lever back to “ON”!



Starter (choke) knob

Starting a cold engine requires a richer air-fuel mixture, which is supplied by the starter (choke).
Move the knob in direction ⓐ to turn on the starter (choke).
Move the knob in direction ⓑ to turn off the starter (choke).



1. Steering lock

Steering lock

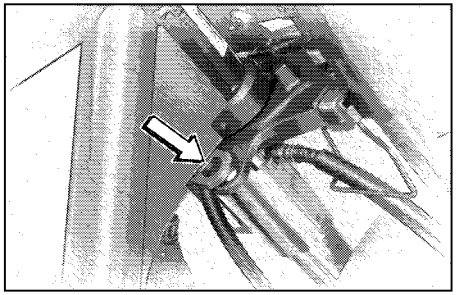
The steering lock is located on the left side of the steering head pipe.

To lock the steering

1. Turn the handlebar all the way to the right.
2. Open the steering lock cover, and then insert the key.
3. Turn the key 1/8 turn counterclockwise, push it in, and then turn it 1/8 turn clockwise.
4. Check that the steering is locked, remove the key, and then close the lock cover.

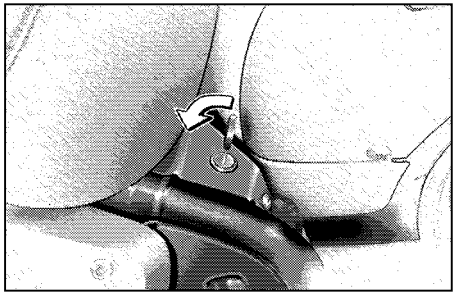
To unlock the steering

1. Open the steering lock cover, and then insert the key.
2. Turn the key counterclockwise 1/8 turn, and release it so that it moves out.
3. Remove the key, and then close the lock cover.



To install a padlock

In addition to the steering lock, there are brackets on the right side of the steering head pipe for locking the steering with a padlock. To do so, turn the handlebar until the holes in the two brackets are aligned, and then lock the steering with a suitable padlock.



Rider seat

To remove the rider seat

1. Insert the key into the seat lock, and then turn it counterclockwise.
2. Pull the rider seat off.

NOTE:

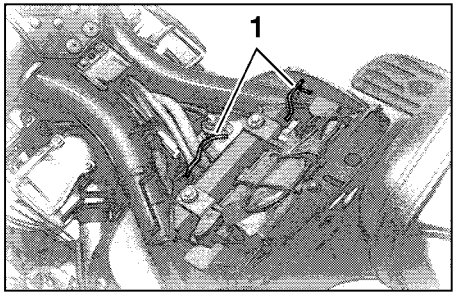
The seat lock is located on the left side behind the rider seat.

To install the rider seat

1. Insert the projection on the front of the seat into the seat holder.
2. Push the rear of the seat down to lock it in place.
3. Turn the key clockwise to the original position, and then remove it.

NOTE:

Make sure that the seat is properly secured before riding.



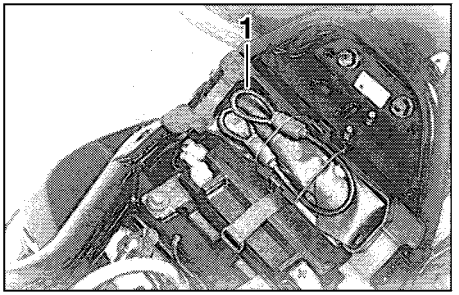
1. Helmet holder (× 2)

Helmet holders

There are two helmet holders located under the rider seat.

To secure a helmet to the right-side helmet holder

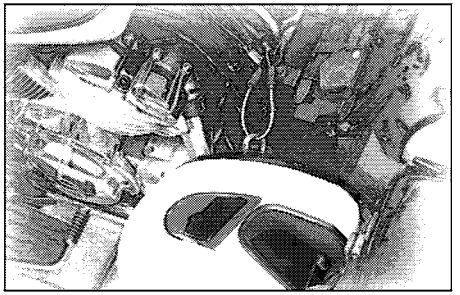
1. Remove the rider seat. (See page 3-10 for rider seat removal and installation procedures.)
2. Attach the helmet to a helmet holder, and then securely install the seat.



1. Helmet holding cable

To secure a helmet to the left-side helmet holder

1. Take the helmet holding cable located beside the tool kit and pass it through the buckle on the helmet strap.
2. Remove the rider seat.
3. Attach both cable loops to the helmet holder.
4. Securely install the rider seat.



⚠ WARNING

Never ride with a helmet attached to a helmet holder, since the helmet may hit objects, causing loss of control and possibly an accident.

To release a helmet from a helmet holder

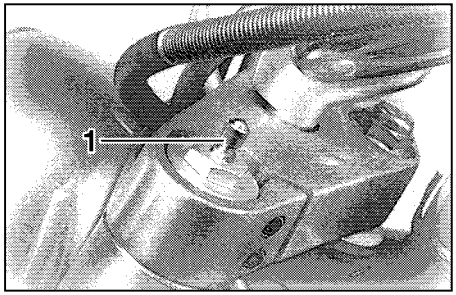
Reverse the appropriate procedure above.

Adjusting the front fork

This front fork is equipped with air valves for adjusting the spring rate.

⚠ WARNING

Always adjust both fork legs equally, otherwise poor handling and loss of stability may result.



1. Air valve

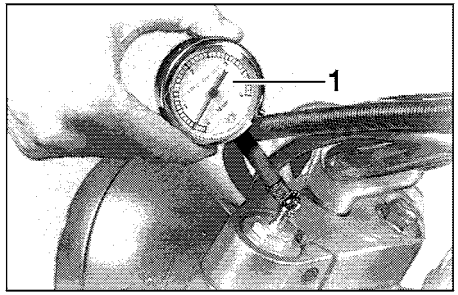
Adjust the spring rate as follows.

1. Place the motorcycle on the sidestand.

NOTE:

When checking and adjusting the air pressure, there should be no weight on the motorcycle.

2. Remove the air valve cap from each fork leg.



1. Air pressure gauge

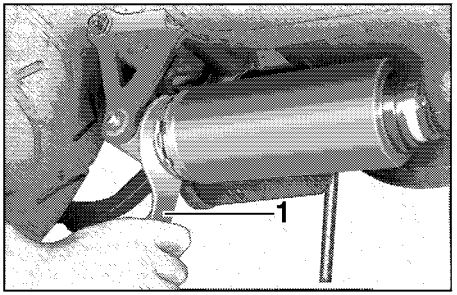
3. Check the air pressure in each fork leg with the air pressure gauge included in the owner's tool kit.
4. To increase the spring rate and thereby harden the suspension, increase the air pressure with an air pump or compressed air. To decrease the spring rate and thereby soften the suspension, decrease the air pressure by pushing each valve stem down.

Spring rate:
Minimum (soft):
Air pressure = Zero
Standard:
Air pressure = Zero
Maximum (hard):
Air pressure =
7.11 psi (0.5 kgf/cm^2, 50 kPa)

CAUTION:

Never exceed the maximum air pressure, otherwise the front fork oil seals may become damaged.

5. Securely install the air valve caps.



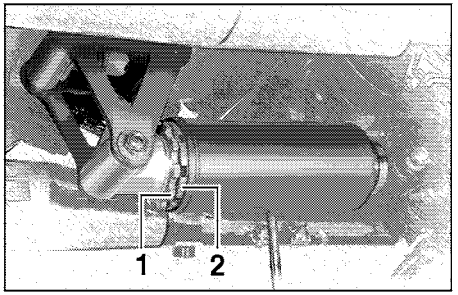
1. Special wrench

Adjusting the shock absorber assembly

This shock absorber assembly is equipped with a spring preload adjusting nut.

CAUTION:

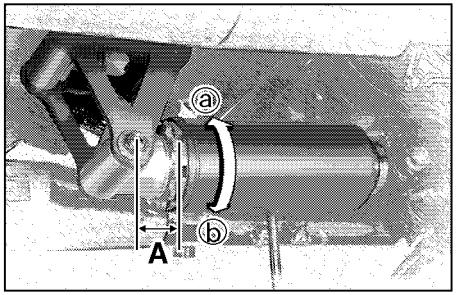
Never attempt to turn an adjusting mechanism beyond the maximum or minimum settings.



1. Locknut
2. Adjusting nut

Adjust the spring preload as follows.

1. Loosen the locknut.



A. Distance A

2. To increase the spring preload and thereby harden the suspension, turn the adjusting nut in direction ⓐ. To decrease the spring preload and thereby soften the suspension, turn the adjusting nut in direction ⓑ.

NOTE:

- The spring preload setting is determined by measuring distance A, shown in the illustration. The shorter distance A is, the higher the spring preload; the longer distance A is, the lower the spring preload.
- Use the special wrench included in the owner's tool kit to make the adjustment.

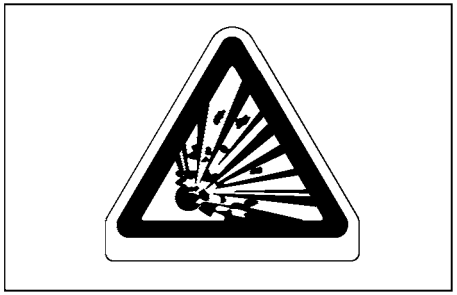
Spring preload:
Minimum (soft):
Distance A = 1.91 in (48.5 mm)
Standard:
Distance A = 1.79 in (45.5 mm)
Maximum (hard):
Distance A = 1.59 in (40.5 mm)

3. Tighten the locknut to the specified torque.

Tightening torque:
Locknut:
18 ft·lb (2.5 m·kg, 25 Nm)

CAUTION:

Always tighten the locknut against the adjusting nut, and then tighten the locknut to the specified torque.



⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas. For proper handling, read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

- **Do not tamper with or attempt to open the gas cylinder.**
- **Do not subject the shock absorber to an open flame or other high heat sources, otherwise it may explode due to excessive gas pressure.**
- **Do not deform or damage the gas cylinder in any way, as this will result in poor damping performance.**
- **Always have a Yamaha dealer service the shock absorber.**

Sidestand

The sidestand is located on the left side of the frame. Raise the sidestand or lower it with your foot while holding the motorcycle upright.

NOTE:

The built-in sidestand switch is part of the ignition circuit cut-off system, which cuts the ignition in certain situations. (See further down for an explanation of the ignition circuit cut-off system.)

⚠ WARNING

The motorcycle must not be ridden with the sidestand down, or if the sidestand cannot be properly moved up (or does not stay up), otherwise the sidestand could contact the ground and distract the operator, resulting in a possible loss of control. Yamaha's ignition circuit cut-off system has been designed to assist the operator in fulfilling the responsibility of raising the sidestand before starting off. Therefore, check this system regularly as described below and have a Yamaha dealer repair it if it does not function properly.

Ignition circuit cut-off system

The ignition circuit cut-off system (comprising the sidestand switch, clutch switch and neutral switch) has the following functions.

- It prevents starting when the transmission is in gear and the sidestand is up, but the clutch lever is not pulled.
- It prevents starting when the transmission is in gear and the clutch lever is pulled, but the sidestand is still down.
- It cuts the running engine when the transmission is in gear and the sidestand is moved down.

Periodically check the operation of the ignition circuit cut-off system according to the following procedure.

⚠ WARNING

If a malfunction is noted, have a Yamaha dealer check the system before riding.

With the engine turned off:
1. Move the sidestand down.
2. Make sure that the engine stop switch is set to "○".
3. Turn the key to "ON".
4. Shift the transmission into the neutral position.
5. Push the start switch.

Does the engine start?

YES **NO** → The neutral switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

With the engine still running:
6. Move the sidestand up.
7. Keep the clutch lever pulled.
8. Shift the transmission into gear.
9. Move the sidestand down.

Does the engine stall?

YES **NO** → The sidestand switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

After the engine has stalled:
10. Move the sidestand up.
11. Keep the clutch lever pulled.
12. Push the start switch.

Does the engine start?

YES **NO** → The clutch switch may be defective. **The motorcycle should not be ridden** until checked by a Yamaha dealer.

The system is OK. **The motorcycle can be ridden.**

NOTE:
This check is most reliable if performed with a warmed-up engine.

Pre-operation check list..... 4-1

PRE-OPERATION CHECKS

The condition of a vehicle is the owner's responsibility. Vital components can start to deteriorate quickly and unexpectedly, even if the vehicle remains unused (for example, as a result of exposure to the elements). Any damage, fluid leakage or loss of tire air pressure could have serious consequences. Therefore, it is very important, in addition to a thorough visual inspection, to check the following points before each ride.

Pre-operation check list

ITEM	CHECKS	PAGE
Fuel	• Check fuel level in fuel tank. • Refuel if necessary. • Check fuel line for leakage.	3-7
Engine oil	• Check oil level in engine. • If necessary, add recommended oil to specified level. • Check vehicle for oil leakage.	6-11
Final gear oil	• Check vehicle for oil leakage.	6-14–6-15
Coolant	• Check coolant level in reservoir. • If necessary, add recommended coolant to specified level. • Check cooling system for leakage.	6-15–6-16
Front brake	• Check operation. • If soft or spongy, have Yamaha dealer bleed hydraulic system. • Check lever free play. • Adjust if necessary. • Check fluid level in reservoir. • If necessary, add recommended brake fluid to specified level. • Check hydraulic system for leakage.	6-22, 6-24–6-26
Rear brake	• Check operation. • If soft or spongy, have Yamaha dealer bleed hydraulic system. • Check fluid level in reservoir. • If necessary, add recommended brake fluid to specified level. • Check hydraulic system for leakage.	6-23–6-26

ITEM	CHECKS	PAGE
Clutch	• Check operation. • If soft or spongy, have Yamaha dealer bleed hydraulic system. • Check fluid level in reservoir. • If necessary, add recommended fluid to specified level. • Check hydraulic system for leakage.	6-21
Throttle grip	• Make sure that operation is smooth. • Lubricate throttle grip, housing and cables if necessary. • Check free play. • If necessary, have Yamaha dealer make adjustment.	6-17
Control cables	• Make sure that operation is smooth. • Lubricate if necessary.	—
Wheels and tires	• Check for damage. • Check tire condition and tread depth. • Check air pressure. • Correct if necessary.	6-18–6-20
Brake and shift pedals	• Make sure that operation is smooth. • Lubricate pedal pivoting points if necessary.	6-26
Brake and clutch levers	• Make sure that operation is smooth. • Lubricate lever pivoting points if necessary.	6-27
Sidestand	• Make sure that operation is smooth. • Lubricate pivot if necessary.	6-27–6-28
Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened. • Tighten if necessary.	—
Instruments, lights, signals and switches	• Check operation. • Correct if necessary.	—
Sidestand switch	• Check operation of ignition circuit cut-off system. • If system is defective, have Yamaha dealer check vehicle.	3-15–3-16

PRE-OPERATION CHECKS

NOTE:

Pre-operation checks should be made each time the motorcycle is used. Such an inspection can be accomplished in a very short time; and the added safety it assures is more than worth the time involved.

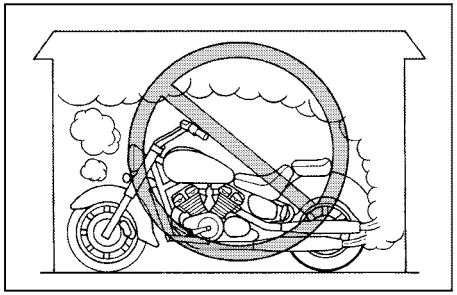
⚠ WARNING

If any item in the Pre-operation check list is not working properly, have it inspected and repaired before operating the motorcycle.

OPERATION AND IMPORTANT RIDING POINTS

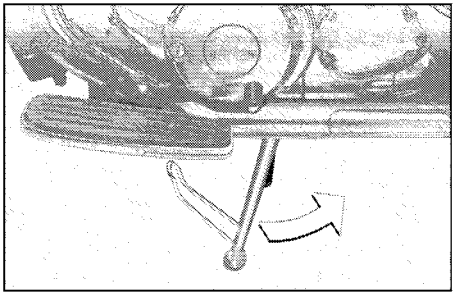
Starting and warming up a cold engine 5-2
Starting a warm engine 5-4
Shifting 5-5
Engine break-in 5-7
Parking 5-8

OPERATION AND IMPORTANT RIDING POINTS



⚠ WARNING

- Become thoroughly familiar with all operating controls and their functions before riding. Consult a Yamaha dealer regarding any control or function that you do not thoroughly understand.
- Never start the engine or operate it in a closed area for any length of time. Exhaust fumes are poisonous, and inhaling them can cause loss of consciousness and death within a short time. Always make sure that there is adequate ventilation.



- Before starting out, make sure that the sidestand is up. If the sidestand is not raised completely, it could contact the ground and distract the operator, resulting in a possible loss of control.

CAUTION:

- Make sure not to store personal items near the air cleaner intake, otherwise air intake will be blocked and performance will suffer.
- Make sure not to put anything near the battery and its terminals, otherwise electrical failure and acid corrosion may result.

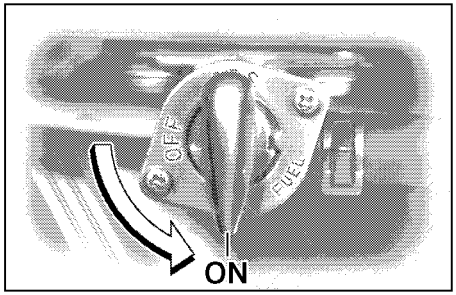
Starting and warming up a cold engine

In order for the ignition circuit cut-off system to enable starting, one of the following conditions must be met:

- The transmission is in the neutral position.
- The transmission is in gear with the clutch lever pulled and the sidestand up.

⚠ WARNING

- **Before starting the engine, check the function of the ignition circuit cut-off system according to the procedure described on page 3-17.**
- **Never ride with the sidestand down.**

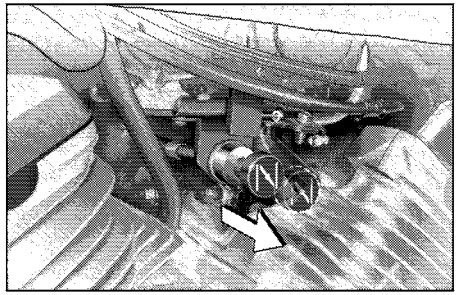


1. Turn the fuel cock lever to "ON".
2. Turn the key to "ON" and make sure that the engine stop switch is set to "○".

CAUTION:

If the fuel level warning light comes on, check the fuel level, and, if necessary, refuel as soon as possible.

3. Shift the transmission into the neutral position.



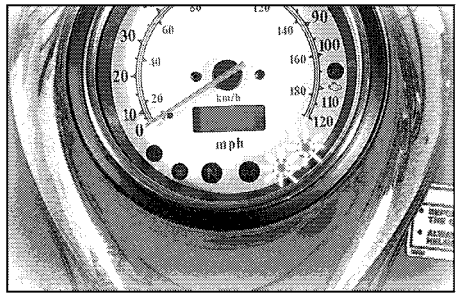
NOTE:

When the transmission is in the neutral position, the neutral indicator light should be on, otherwise have a Yamaha dealer check the electrical circuit.

4. Turn the starter (choke) on and completely close the throttle. (See page 3-9 for starter (choke) operation.)
5. Start the engine by pushing the start switch.

NOTE:

If the engine fails to start, release the start switch, wait a few seconds, and then try again. Each starting attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.



CAUTION:

- **The oil level warning light and engine overheat warning light should come on when the start switch is pushed, and they should go off when the start switch is released.**
- **If the oil level warning light flickers or remains on after starting, immediately stop the engine, and then check the engine oil level and the vehicle for oil leakage. If necessary, add engine oil, and then check the warning light again. If the warning light does not come on when pushing the start switch, or if it does not go off after starting with sufficient engine oil, have a Yamaha dealer check the electrical circuit.**
- **If the engine overheat warning light remains on after starting, immediately stop the engine, and allow it to cool. If the warning light does not come on when pushing the start switch, or if it does not go off after starting the engine, have a Yamaha dealer check the electrical circuit.**

6. After starting the engine, move the starter (choke) knob back halfway.

CAUTION:

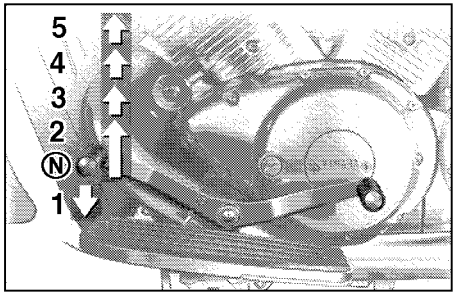
For maximum engine life, always warm the engine up before starting off. Never accelerate hard when the engine is cold!

7. When the engine is warm, turn the starter (choke) off.

NOTE:
The engine is warm when it responds normally to the throttle with the starter (choke) turned off. To avoid the possibility of excessive exhaust emissions, never leave the starter (choke) on longer than necessary. The time necessary for starter (choke) use depends upon the ambient temperature. Temperatures above 50 °F (10 °C) require about 7 seconds of starter (choke) use and temperatures below 50 °F (10 °C) require about 35 seconds with the starter (choke) turned on, then about 2.5 minutes with the starter (choke) in the halfway position.

Starting a warm engine

Follow the same procedure as for starting a cold engine with the exception that the starter (choke) is not required when the engine is warm.



Shifting

Shifting gears lets you control the amount of engine power available for starting off, accelerating, climbing hills, etc.

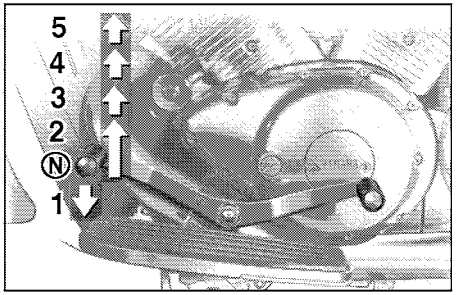
The gear positions are shown in the illustration.

NOTE:

To shift the transmission into the neutral position, press the shift pedal down repeatedly until it reaches the end of its travel, and then slightly raise it.

CAUTION:

- **Even with the transmission in the neutral position, do not coast for long periods of time with the engine off, and do not tow the motorcycle for long distances. The transmission is properly lubricated only when the engine is running. Inadequate lubrication may damage the transmission.**
- **Always use the clutch while changing gears to avoid damaging the engine, transmission, and drive train, which are not designed to withstand the shock of forced shifting.**

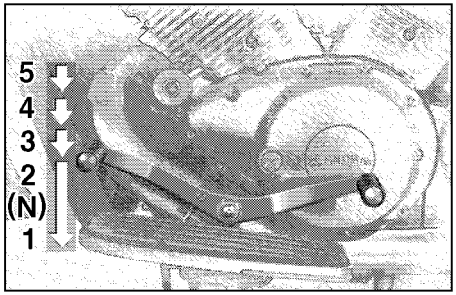


To start out and accelerate

1. Pull the clutch lever to disengage the clutch.
2. Shift the transmission into first gear. The neutral indicator light should go out.
3. Open the throttle gradually, and at the same time, release the clutch lever slowly.
4. At the recommended shift points shown in the table on page 5-6, close the throttle, and at the same time, quickly pull the clutch lever in.

5. Shift the transmission into second gear. (Make sure not to shift the transmission into the neutral position.)
6. Open the throttle part way and gradually release the clutch lever.
7. Follow the same procedure when shifting to the next higher gear.

NOTE:
Always shift gears at the recommended shift points.



To decelerate

1. Apply both the front and the rear brakes to slow the motorcycle.
2. Shift the transmission into first gear when the motorcycle reaches 16 mi/h (25 km/h). If the engine is about to stall or runs very roughly, pull the clutch lever in and use the brakes to stop the motorcycle.
3. Shift the transmission into the neutral position when the motorcycle is almost completely stopped. The neutral indicator light should come on.

Recommended shift points

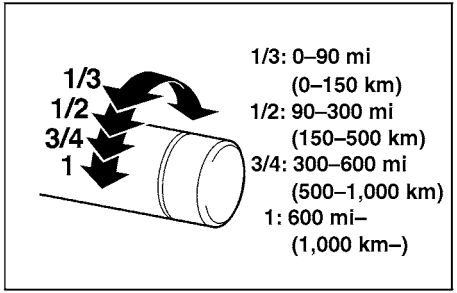
The recommended shift points during acceleration and deceleration are shown in the table below.

	Acceleration shift point mi/h (km/h)	Deceleration shift point mi/h (km/h)
1st → 2nd	13 (20)	16 (25)
2nd → 3rd	19 (30)	16 (25)
3rd → 4th	25 (40)	16 (25)
4th → 5th	31 (50)	16 (25)

Engine break-in

There is never a more important period in the life of your engine than the period between 0 and 600 mi (1,000 km). For this reason, you should read the following material carefully.

Since the engine is brand new, do not put an excessive load on it for the first 600 mi (1,000 km). The various parts in the engine wear and polish themselves to the correct operating clearances. During this period, prolonged full-throttle operation or any condition that might result in engine overheating must be avoided.



0–90 mi (0–150 km)

- Avoid prolonged operation above 1/3 throttle.
- After every hour of operation, stop the engine, and then let it cool for five to ten minutes.
- Vary the engine speed from time to time. Do not operate the engine at one set throttle position.

90–300 mi (150–500 km)

- Avoid prolonged operation above 1/2 throttle.
- Rev the engine freely through the gears, but do not use full throttle at any time.

300–600 mi (500–1,000 km)

Avoid prolonged operation above 3/4 throttle.

CAUTION:

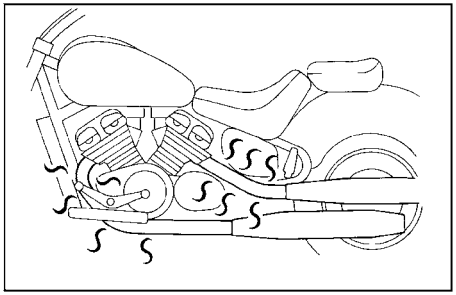
After 600 mi (1,000 km) of operation, the engine oil and final gear oil must be changed, and the oil filter cartridge replaced.

600 mi (1,000 km) and beyond

Avoid prolonged full-throttle operation. Vary the speed occasionally.

CAUTION:

If any engine trouble should occur during the engine break-in period, immediately have a Yamaha dealer check the vehicle.



Parking

When parking, stop the engine, remove the key from the main switch, and then turn the fuel cock lever to "OFF".

⚠ WARNING

- **Since the engine and exhaust system can become very hot, park in a place where pedestrians or children are not likely to touch them.**
- **Do not park on a slope or on soft ground, otherwise the motorcycle may overturn.**

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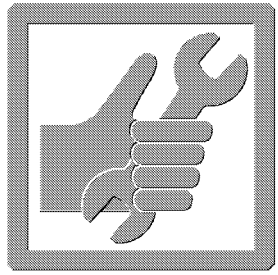
PERIODIC MAINTENANCE AND MINOR REPAIR

Safety is an obligation of the owner. Periodic inspection, adjustment and lubrication will keep your vehicle in the safest and most efficient condition possible. The most important points of motorcycle inspection, adjustment, and lubrication are explained on the following pages.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any repair establishment or individual that is certified (if applicable).

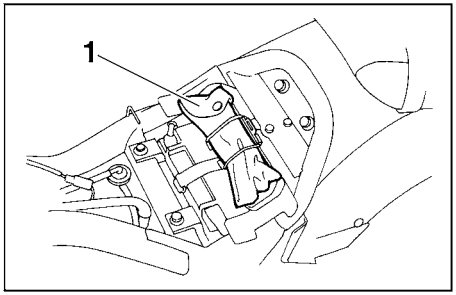
⚠ WARNING

If you are not familiar with motorcycle maintenance work, have a Yamaha dealer do it for you.



PERIODIC MAINTENANCE

PROPER PERIODIC MAINTENANCE OF YOUR MOTORCYCLE IS IMPORTANT IN ORDER TO ENJOY LONG, PLEASURABLE SERVICE. ESPECIALLY IMPORTANT ARE THE MAINTENANCE SERVICES RELATED TO EMISSIONS CONTROL. THESE CONTROLS NOT ONLY FUNCTION TO ENSURE CLEANER AIR, BUT ARE ALSO VITAL TO PROPER ENGINE OPERATION AND MAXIMUM PERFORMANCE. IN THE FOLLOWING PERIODIC MAINTENANCE CHARTS, THE SERVICES RELATED TO EMISSIONS CONTROL ARE GROUPED SEPARATELY. THESE SERVICES REQUIRE SPECIALIZED DATA, KNOWLEDGE, AND EQUIPMENT. YAMAHA DEALERS ARE TRAINED AND EQUIPPED TO PERFORM THESE PARTICULAR SERVICES.



1. Owner's tool kit

Owner's tool kit

The owner's tool kit is located under the rider seat. (See page 3-10 for rider seat removal and installation procedures.)
The service information included in this manual and the tools provided in the owner's tool kit are intended to assist you in the performance of preventive maintenance and minor repairs. However, additional tools such as a torque wrench may be necessary to perform certain maintenance work correctly.

NOTE:
If you do not have the tools or experience required for a particular job, have a Yamaha dealer perform it for you.

⚠ WARNING
Modifications not approved by Yamaha may cause loss of performance, excessive emissions, and render the vehicle unsafe for use. Consult a Yamaha dealer before attempting any changes.

Periodic maintenance chart for the emission control system

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
1	*	**Valve clearance**	• Check valve clearance when engine is cold. • Adjust if necessary.	**Every 28,000 mi (43,000 km) or 42 months**					
2		**Spark plug**	• Check condition. • Adjust gap and clean.		√	**Replace.**	√	**Replace.**	√
3	*	**Crankcase ventilation system**	• Check ventilation hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
4	*	**Fuel line**	• Check fuel hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
5	*	**Fuel filter**	• Replace every 20,000 mi (31,000 km) or 30 months.						**Replace.**
6	*	**Exhaust system**	• Check for leakage. • Retighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
7	*	**Carburetor synchronization**	• Adjust synchronization of carburetors.	√	√	√	√	√	√
8	*	**Idle speed**	• Check and adjust engine idle speed. • Adjust cable free play.	√	√	√	√	√	√
9	*	**Evaporative emission control system (for California only)**	• Check control system for damage. • Replace if necessary.				√		√

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

General maintenance and lubrication chart

No.		ITEM	ROUTINE	TYPE	INITIAL	ODOMETER READINGS				
					600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
1		**Engine oil**	• Replace.	See page 8-1.	√		√		√	
2	*	**Engine oil filter cartridge**	• Replace.	-	√		√		√	
3	*	**Air filter (See NOTE on page 6-6.)**	• Clean with compressed air. • Replace if necessary.	-		√	√	√	√	√
4	*	**Cooling system**	• Check hoses for cracks or damage, replace if necessary.	-		√	√	√	√	√
			• Replace coolant every 24 months.	Ethylene glycol antifreeze coolant					**Replace.**	
5	*	**Brake system**	• Adjust free play. • Check and replace pads if necessary.	-	√	√	√	√	**Replace brake fluid.**	√
6	*	**Clutch**	• Check operation and fluid leakage. (See NOTE page 6-6.) • Correct if necessary.	-	√	√	√	√	√	√
7	*	**Final gear oil**	• Check vehicle for leakage. • Replace every 16,000 mi (25,000 km) or 24 months.	Hypoid gear oil SAE 80 (API GL4)	**Replace.**		**Check.**		**Replace.**	
8	*	**Control cables**	• Apply chain lube thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil	√	√	√	√	√	√
9	*	**Rear arm pivot bearing**	• Check bearing assembly for looseness. • Moderately repack every 16,000 mi (25,000 km) or 24 months.	Medium weight wheel bearing grease			√		**Repack.**	

No.		ITEM	ROUTINE	TYPE	INITIAL	ODOMETER READINGS				
					600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
10		**Brake and clutch lever pivot shaft**	• Apply chain lube lightly.	Lithium-soap-based grease (all-purpose grease)		√	√	√	√	√
11		**Brake pedal and shift pedal shaft**	• Lubricate • Apply chain lube lightly.	Lithium-soap-based grease (all-purpose grease)		√	√	√	√	√
12	*	**Sidestand pivot**	• Check operation and lubricate. • Apply chain lube lightly.	Lithium-soap-based grease (all-purpose grease)		√	√	√	√	√
13	*	**Sidestand switch**	• Check and clean or replace if necessary.	-	√	√	√	√	√	√
14	*	**Front fork**	• Check operation and for leakage.	-		√	√	√	√	√
15	*	**Steering bearings**	• Check bearing assembly for looseness. • Moderately repack every 16,000 mi (25,000 km) or 24 months.	Medium weight wheel bearing grease.		√	√	√	**Repack.**	√
16	*	**Wheel bearings**	• Check bearings for smooth rotation.	-		√	√	√	√	√
17	*	**Rear suspension link pivots**	• Apply grease lightly.	Molybdenum disulfide grease					√	

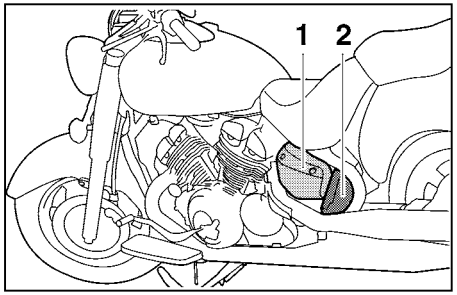
* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

NOTE:

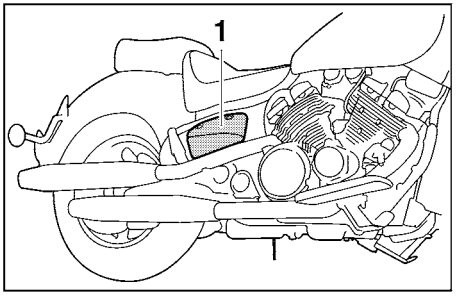
For odometer readings or time periods higher than 20,000 mi (31,000 km) or 30 months, follow the maintenance requirements listed in the maintenance chart under the 4,000 mi (7,000 km) or 6 month interval.

NOTE:

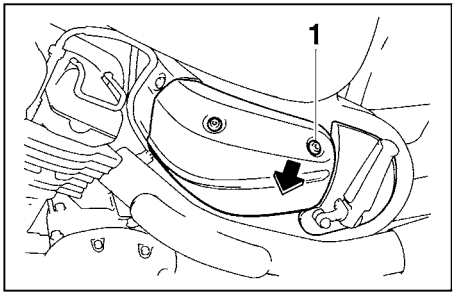
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake and clutch systems
  - After disassembling the master cylinder, caliper cylinder or clutch release cylinder, always replace the brake fluid. Check the brake fluid level of the master cylinder and clutch release cylinder regularly and fill as required.
  - Replace the oil seals on the inner parts of the master cylinder, caliper cylinder and clutch release cylinder every two years.
  - Replace the brake and clutch hoses every four years or if cracked or damaged.



1. Panel A
2. Panel B



1. Panel C



1. Screw

Removing and installing panels

The panels shown above need to be removed to perform some of the maintenance jobs described in this chapter. Refer to this section each time a panel needs to be removed and installed.

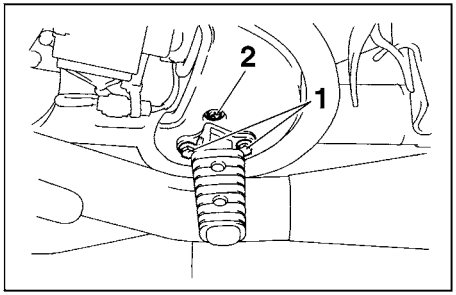
Panel A

To remove the panel

Remove the screw, and then pull the panel off as shown.

To install the panel

Place the panel in the original position, and then install the screw.



1. Bolt (× 2)
2. Screw

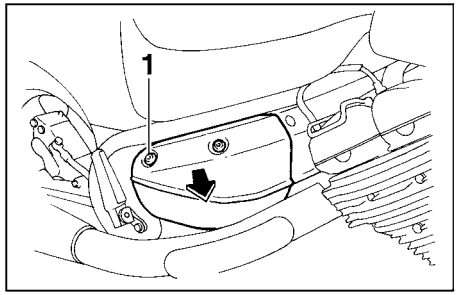
Panel B

To remove the panel

1. Remove panel A. (See page 6-7 for panel removal and installation procedures.)
2. Remove the left passenger footrest by removing the bolts.
3. Remove the screw, and then pull the panel off as shown.

To install the panel

1. Place the panel in the original position, and then install the screw.
2. Install the passenger footrest by installing the bolts.
3. Install panel A.



1. Screw

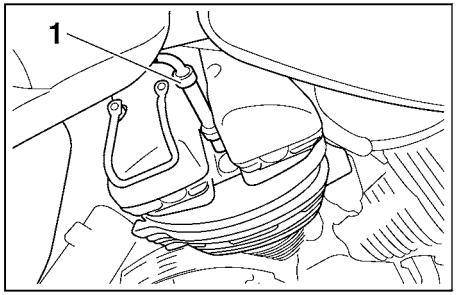
Panel C

To remove the panel

Remove the screw, and then pull the panel off as shown.

To install the panel

Place the panel in the original position, and then install the screw.



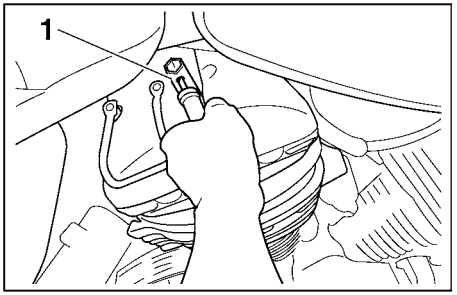
1. Spark plug cap

Checking the spark plugs

The spark plugs are important engine components, which are easy to check. Since heat and deposits will cause any spark plug to slowly erode, the spark plugs should be removed and checked in accordance with the periodic maintenance and lubrication chart. In addition, the condition of the spark plugs can reveal the condition of the engine.

To remove a spark plug

1. Remove the spark plug cap.



1. Spark plug wrench

2. Remove the spark plug as shown, with the spark plug wrench included in the owner's tool kit.

To check the spark plugs

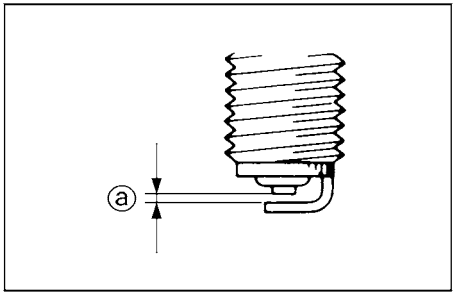
1. Check that the porcelain insulator around the center electrode on each spark plug is a medium-to-light tan (the ideal color when the motorcycle is ridden normally).
2. Check that all spark plugs installed in the engine have the same color.

NOTE:

If any spark plug shows a distinctly different color, the engine could be defective. Do not attempt to diagnose such problems yourself. Instead, have a Yamaha dealer check the motorcycle.

3. Check each spark plug for electrode erosion and excessive carbon or other deposits, and replace it if necessary.

Specified spark plug:
DPR7EA-9/NGK or
X22EPR-U9/DENSO



a. Spark plug gap

To install a spark plug

1. Measure the spark plug gap with a wire thickness gauge and, if necessary, adjust the gap to specification.

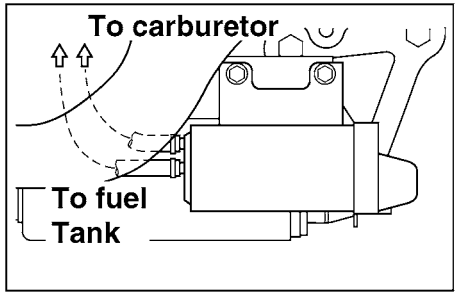
Spark plug gap:
0.03–0.04 in (0.8–0.9 mm)

2. Clean the surface of the spark plug gasket and its mating surface, and then wipe off any grime from the spark plug threads.
3. Install the spark plug with the spark plug wrench, and then tighten it to the specified torque.

Tightening torque:
Spark plug:
12.5 ft·lb (1.75 m·kg, 17.5 Nm)

NOTE:
If a torque wrench is not available when installing a spark plug, a good estimate of the correct torque is 1/4–1/2 turn past finger tight. However, the spark plug should be tightened to the specified torque as soon as possible.

4. Install the spark plug cap.



Canister (for California only)

This model is equipped with a canister to prevent the discharging of fuel vapor into the atmosphere. Before operating this motorcycle, make sure to check the following:

- Check each hose connection.
- Check each hose and canister for cracks or damage. Replace if damaged.
- Make sure that the canister breather is not blocked, and if necessary, clean it.

Engine oil and oil filter cartridge

The engine oil level should be checked before each ride. In addition, the oil must be changed and the oil filter cartridge replaced at the intervals specified in the periodic maintenance and lubrication chart.

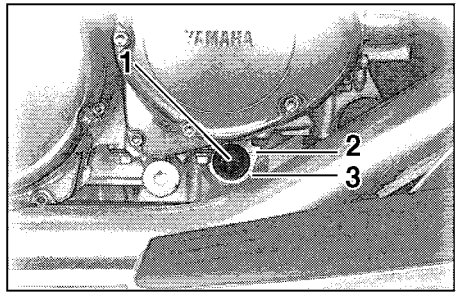
To check the engine oil level

1. Place the motorcycle on a level surface and hold it in an upright position.

NOTE:

Make sure that the motorcycle is positioned straight up when checking the oil level. A slight tilt to the side can result in a false reading.

2. Start the engine, warm it up for several minutes, and then turn it off.



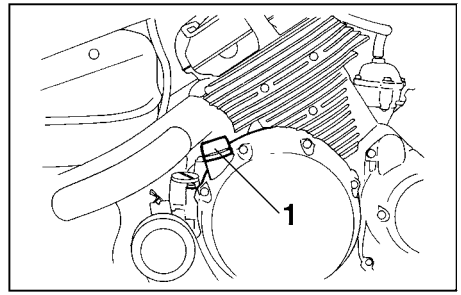
1. Engine oil level check window
2. Maximum level mark
3. Minimum level mark

3. Wait a few minutes until the oil settles, and then check the oil level through the check window located at the bottom-right side of the crankcase.

NOTE:

The engine oil should be between the minimum and maximum level marks.

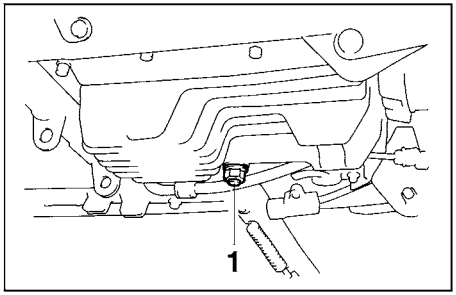
4. If the engine oil is below the minimum level mark, add sufficient oil of the recommended type to raise it to the correct level.



1. Engine oil filler cap

To change the engine oil (with or without oil filter cartridge replacement)

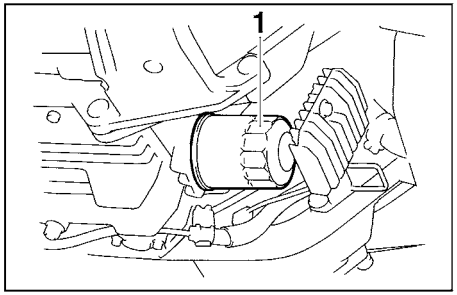
1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place an oil pan under the engine to collect the used oil.



1. Engine oil drain bolt

3. Remove the engine oil filler cap and drain bolt to drain the oil from the crankcase.

NOTE:
Skip steps 4–6 if the oil filter cartridge is not being replaced.



1. Oil filter cartridge

4. Remove the oil filter cartridge with an oil filter wrench.

NOTE:
An oil filter wrench is available at a Yamaha dealer.

5. Apply a thin coat of engine oil to the O-ring of the new oil filter cartridge.

NOTE:
Make sure that the O-ring is properly seated.

6. Install the new oil filter cartridge, and then tighten it to the specified torque with a torque wrench.

Tightening torque:
Oil filter cartridge:
12 ft·lb (1.7 m·kg, 17 Nm)

7. Install the engine oil drain bolt, and then tighten it to the specified torque.

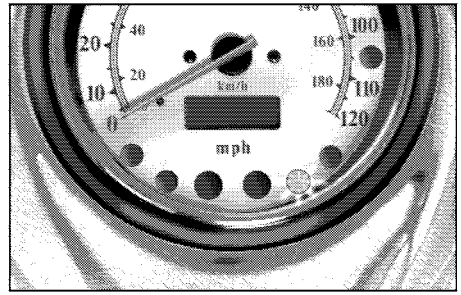
Tightening torque:
Engine oil drain bolt:
31 ft·lb (4.3 m·kg, 43 Nm)

8. Add the specified amount of the recommended engine oil, and then install and tighten the oil filler cap.

Recommended engine oil:
See page 8-1.
Oil quantity:
Without oil filter cartridge replacement:
3.7 US qt (3.1 Imp qt, 3.5 L)
With oil filter cartridge replacement:
3.9 US qt (3.3 Imp qt, 3.7 L)
Total amount (dry engine):
4.6 US qt (3.8 Imp qt, 4.3 L)

CAUTION:

- **In order to prevent clutch slippage (since the engine oil also lubricates the clutch), do not mix any chemical additives with the oil or use oils of a higher grade than "CD". In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.**
- **Make sure that no foreign material enters the crankcase.**



9. Start the engine, and then let it idle for several minutes while checking it for oil leakage. If oil is leaking, immediately turn the engine off and check for the cause.

NOTE:
After the engine is started, the engine oil level warning light should go off if the oil level is sufficient.

CAUTION:

If the oil level warning light flickers or remains on, immediately turn the engine off and have a Yamaha dealer check the vehicle.

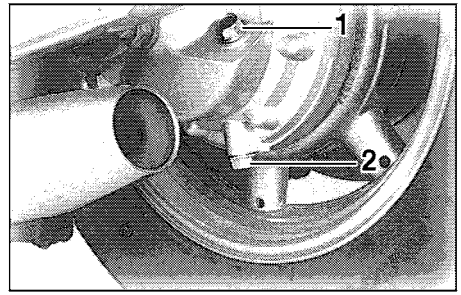
10. Turn the engine off, and then check the oil level and correct it if necessary.

Final gear oil

The final gear case must be checked for oil leakage before each ride. If any leakage is found, have a Yamaha dealer check and repair the motorcycle. In addition, the final gear oil level must be checked and the oil changed as follows at the intervals specified in the periodic maintenance and lubrication chart.

⚠ WARNING

- **Make sure that no foreign material enters the final gear case.**
- **Make sure that no oil gets on the tire or wheel.**



1. Final gear oil filler bolt
2. Final gear oil drain bolt

To check the final gear oil level

1. Place the motorcycle on a level surface and hold it in an upright position.

NOTE:

- The final gear oil level must be checked on a cold engine.
- Make sure that the motorcycle is positioned straight up when checking the oil level. A slight tilt to the side can result in a false reading.

2. Remove the oil filler bolt, and then check the oil level in the final gear case.

NOTE:
The oil level should be at the brim of the filler hole.

3. If the oil is below the brim of the filler hole, add sufficient oil of the recommended type to raise it to the correct level.

To change the final gear oil

1. Place an oil pan under the final gear case to collect the used oil.
2. Remove the oil filler bolt and drain bolt to drain the oil from the final gear case.
3. Install the final gear oil drain bolt, and then tighten it to the specified torque.

Tightening torque:
Final gear oil drain bolt:
17 ft·lb (2.3 m·kg, 23 Nm)

4. Add the recommended final gear oil to the brim of the filler hole.

Recommended final gear oil:
Hypoid gear oil SAE 80 (API GL4) or multi-grade hypoid gear oil SAE 80W-90
Oil quantity:
0.21 US qt (0.18 Imp qt, 0.2 L)

NOTE:
GL4 is a quality rating. Hypoid gear oils rated GL5 or GL6 may also be used.

5. Install and tighten the filler bolt.
6. Check the final gear case for oil leakage. If oil is leaking, check for the cause.

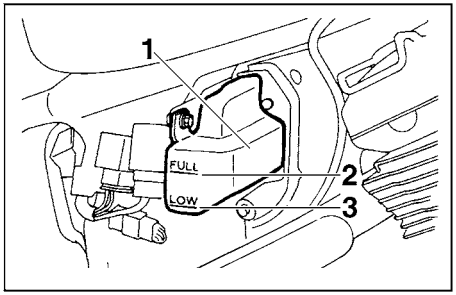
Coolant

The coolant level should be checked before each ride. In addition, the coolant must be changed at the intervals specified in the periodic maintenance and lubrication chart.
If the engine overheats, see page 6-35 for further instructions.

To check the coolant level

1. Place the motorcycle on a level surface and hold it in an upright position.
2. Remove panel B. (See page 6-8 for panel removal and installation procedures.)

NOTE:
- The coolant level must be checked on a cold engine since the level varies with engine temperature.
- Make sure that the motorcycle is positioned straight up when checking the coolant level. A slight tilt to the side can result in a false reading.

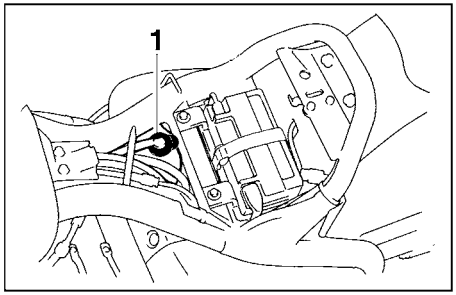


1. Coolant reservoir
2. Maximum level mark
3. Minimum level mark

3. Check the coolant level in the coolant reservoir.

NOTE:
The coolant should be between the minimum and maximum level marks.

4. If the coolant is at or below the minimum level mark, remove the rider seat (See page 3-10 for rider seat removal and installation procedures.), remove the reservoir cap, add coolant to the maximum level mark, and then install the reservoir cap and the rider seat.



1. Reservoir cap

Coolant reservoir capacity:
0.89 L (0.74 Imp qt, 0.84 US qt)

CAUTION:

- **If coolant is not available, use distilled water or soft tap water instead. Do not use hard water or salt water since it is harmful to the engine.**
- **If water has been used instead of coolant, replace it with coolant as soon as possible, otherwise the engine may not be sufficiently cooled and the cooling system will not be protected against frost and corrosion.**
- **If water has been added to the coolant, have a Yamaha dealer check the antifreeze content of the coolant as soon as possible, otherwise the effectiveness of the coolant will be reduced.**

⚠ WARNING

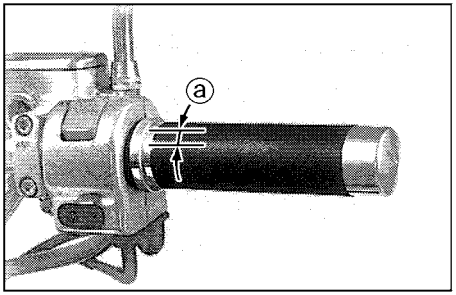
Never attempt to remove the radiator cap when the engine is hot.

5. Install the panel.

NOTE:
The radiator fan is automatically switched on or off according to the coolant temperature in the radiator. If the engine overheats, see page 6-35 for further instructions.

Adjusting the carburetors

The carburetors are important parts of the engine and emission control system, which require very sophisticated adjustment. Therefore, all carburetor adjustments should be left to a Yamaha dealer, who has the necessary professional knowledge and experience.



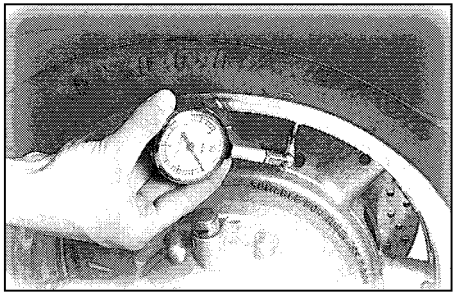
a. Throttle cable free play

Adjusting the throttle cable free play

The throttle cable free play should measure 0.16–0.24 in (4–6 mm) at the throttle grip. Periodically check the throttle cable free play and, if necessary, have a Yamaha dealer adjust it.

Adjusting the valve clearance

The valve clearance changes with use, resulting in improper air-fuel mixture and/or engine noise. To prevent this from occurring, the valve clearance must be adjusted by a Yamaha dealer at the intervals specified in the periodic maintenance and lubrication chart.



Tires

To maximize the performance, durability, and safe operation of your motorcycle, note the following points regarding the specified tires.

Tire air pressure

The tire air pressure should be checked and, if necessary, adjusted before each ride.

⚠ WARNING

- **The tire air pressure must be checked and adjusted on cold tires (i.e., when the temperature of the tires equals the ambient temperature).**
- **The tire air pressure must be adjusted in accordance with the riding speed and with the total weight of rider, passenger, cargo, and accessories approved for this model.**

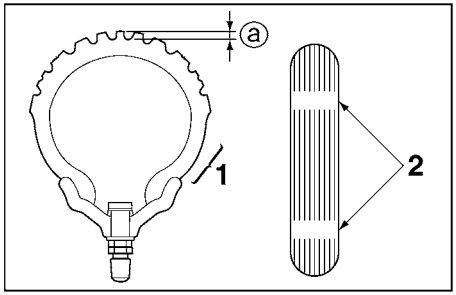
Tire air pressure (measured on cold tires)		
Load*	Front	Rear
Up to 198 lb (90 kg)	36 psi 2.50 kgf/cm^2 250 kPa	36 psi 2.50 kgf/cm^2 250 kPa
198 lb (90 kg)–maximum	36 psi 2.50 kgf/cm^2 250 kPa	41 psi 2.80 kgf/cm^2 280 kPa

Maximum load*	448 lb (203 kg)

* Total weight of rider, passenger, cargo and accessories

⚠ WARNING

Proper loading of your motorcycle is important for several characteristics of your motorcycle, such as handling, braking, performance and safety. Do not carry loosely packed items that can shift. Securely pack your heaviest items close to the center of the motorcycle, and distribute the weight evenly from side to side. Properly adjust the suspension for your load, and check the condition and pressure of your tires. NEVER OVERLOAD YOUR MOTORCYCLE. Make sure that the total weight of the cargo, rider, passenger, and accessories (cowling, saddlebags, etc. if approved for this model) does not exceed the maximum load of the motorcycle. Operation of an overloaded motorcycle could cause tire damage, an accident, or even injury.



1. Sidewall
2. Wear indicator
a. Tire tread depth

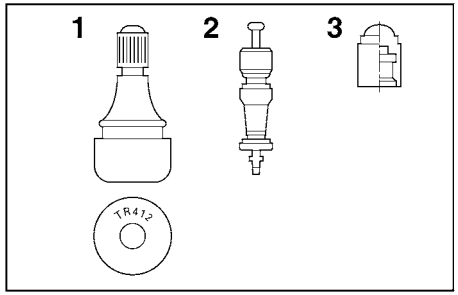
Tire inspection

Always check the tires before operating the motorcycle. If a tire tread shows crosswise lines (minimum tread depth), if the tire has a nail or glass fragments in it, or if the side wall is cracked, contact a Yamaha dealer immediately and have the tire replaced.

Minimum tire tread depth (front and rear)	0.04 in (1.0 mm)

⚠ WARNING

It is dangerous to ride with a worn-out tire. When a tire tread begins to show lines, have a Yamaha dealer replace the tire immediately. Brakes, tires and related wheel parts replacement should also be left to a Yamaha dealer.



1. Tire air valve
2. Valve core
3. Valve cap with seal

Tire information

This motorcycle is equipped with cast wheels and tubeless tires with air valves.

⚠ WARNING

- **The front and rear tires should be of the same make and design, otherwise the handling characteristics of the motorcycle cannot be guaranteed.**
- **After extensive tests, only the tires listed below have been approved for this model by Yamaha Motor Co., Ltd.**

- **Always make sure that the valve caps are securely installed to prevent air pressure leakage.**
- **Use only the tire valves and valve cores listed below to avoid tire deflation during a ride.**

FRONT

Manufacturer	Size	Model
Dunlop	150/80-16 71H	D404F
Bridgestone	150/80-16 71H	G705

Tire air valve	TR412
Valve core	#9000A

REAR

Manufacturer	Size	Model
Dunlop	150/90B15 M/C 74H	D404
Bridgestone	150/90B15 M/C 74H	G702

Tire air valve	PVR59A
Valve core	#9000

Cast wheels

To maximize the performance, durability, and safe operation of your motorcycle, note the following points regarding the specified wheels.

- The wheel rims should be checked for cracks, bends, warpage or damage before each ride. If any damage is found, have a Yamaha dealer replace the wheel. Do not attempt even the smallest repair to the wheel. A deformed or cracked wheel must be replaced.
- The wheel should be balanced whenever either the tire or wheel has been changed or replaced. An unbalanced wheel can result in poor performance, adverse handling characteristics, and a shortened tire life.
- Ride at moderate speeds after changing a tire since the tire surface must first be "broken in" for it to develop its optimal characteristics.
- After repairing or replacing the rear tire, tighten the valve stem nut and locknut to the specified torques.

Tightening torques:
Valve stem nut:
1.16 ft·lb (0.16 m·kg, 1.6 Nm)
Valve stem locknut:
1.16 ft·lb (0.16 m·kg, 1.6 Nm)

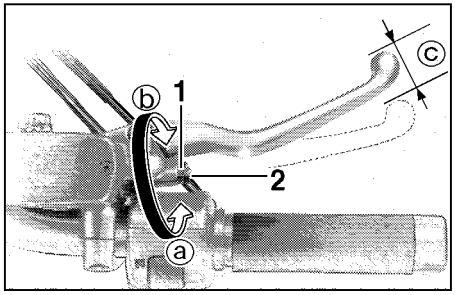
Accessories and replacement parts

⚠ WARNING

This motorcycle is not designed to pull a trailer or to be attached to a sidecar. The accessories or replacement parts you choose for your motorcycle should be designed specifically for this model, and they must be securely mounted to maintain the inherent stability of the original design. Genuine Yamaha Parts and Accessories are designed and tested to be compatible with your motorcycle. Please consider Genuine Yamaha Parts and Accessories before making a purchase. Use of non-Yamaha-approved accessories or replacement parts may cause loss of handling stability and riding safety. Since Yamaha cannot control the quality of accessories or parts manufactured by other companies, Yamaha cannot be held liable for any consequences caused by the use of items which have not been approved by Yamaha.

Clutch lever free play

Since this model is equipped with a hydraulic clutch, adjusting the clutch lever free play is not needed. However, it is necessary to check the clutch fluid level and check the hydraulic system for leakage before each ride. If the clutch lever free play does become excessive, and shifting becomes rough or clutch slippage occurs, causing poor acceleration, there may be air in the clutch system. If there is air in the hydraulic system, have a Yamaha dealer bleed the system before operating the motorcycle.



1. Locknut
2. Brake lever free play adjusting bolt
c. Brake lever free play

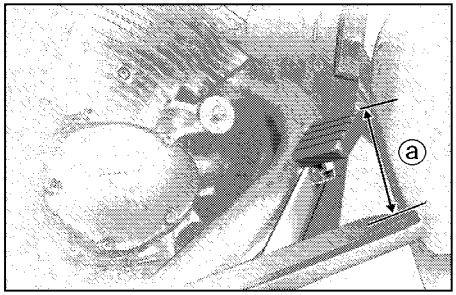
Adjusting the brake lever free play

The brake lever free play should measure 0.08–0.2 in (2–5 mm) as shown. Periodically check the brake lever free play and, if necessary, adjust it as follows.

1. Loosen the locknut at the brake lever.
2. To increase the brake lever free play, turn the adjusting bolt in direction ⓐ. To decrease the brake lever free play, turn the adjusting bolt in direction ⓑ.
3. Tighten the locknut.

⚠ WARNING

- **After adjusting the brake lever free play, check the free play and make sure that the brake is working properly.**
- **A soft or spongy feeling in the brake lever can indicate the presence of air in the hydraulic system. If there is air in the hydraulic system, have a Yamaha dealer bleed the system before operating the motorcycle. Air in the hydraulic system will diminish the braking performance, which may result in loss of control and an accident.**



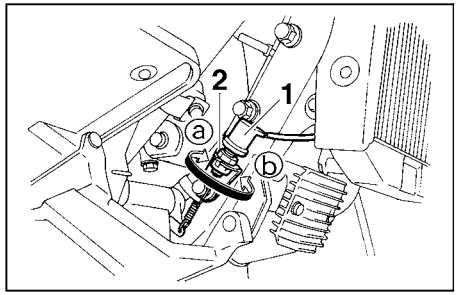
a. Distance between brake pedal and footrest

Adjusting the brake pedal position

The top of the brake pedal should be positioned approximately 3.9 in (100 mm) above the top of the footrest as shown. Periodically check the brake pedal position and, if necessary, have a Yamaha dealer adjust it.

⚠ WARNING

A soft or spongy feeling in the brake pedal can indicate the presence of air in the hydraulic system. If there is air in the hydraulic system, have a Yamaha dealer bleed the system before operating the motorcycle. Air in the hydraulic system will diminish the braking performance, which may result in loss of control and an accident.



1. Rear brake light switch
2. Rear brake light switch adjusting nut

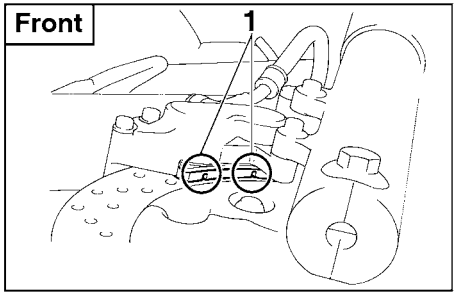
Adjusting the rear brake light switch

The rear brake light switch, which is activated by the brake pedal, is properly adjusted when the brake light comes on just before braking takes effect. If necessary, adjust the brake light switch as follows.

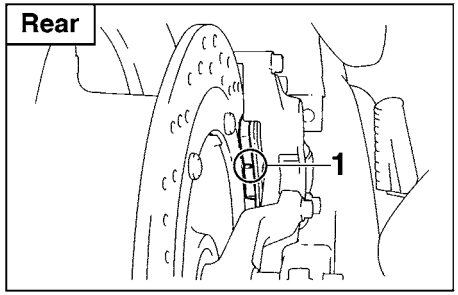
Turn the adjusting nut while holding the rear brake light switch in place. To make the brake light come on earlier, turn the adjusting nut in direction ⓐ. To make the brake light come on later, turn the adjusting nut in direction ⓑ.

Checking the front and rear brake pads

The front and rear brake pads must be checked for wear at the intervals specified in the periodic maintenance and lubrication chart.



1. Front brake pad wear indicator groove (× 2)



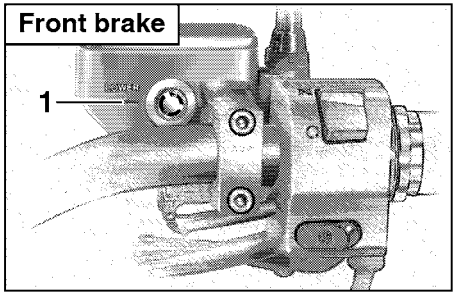
1. Rear brake pad wear indicator groove

Front brake pads

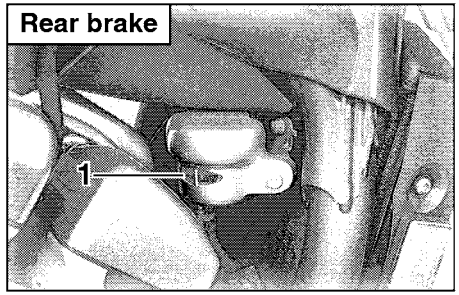
Each front brake pad is provided with wear indicator grooves, which allow you to check the brake pad wear without having to disassemble the brake. To check the brake pad wear, check the wear indicator grooves. If a brake pad has worn to the point that the wear indicators have almost disappeared, have a Yamaha dealer replace the brake pads as a set.

Rear brake pads

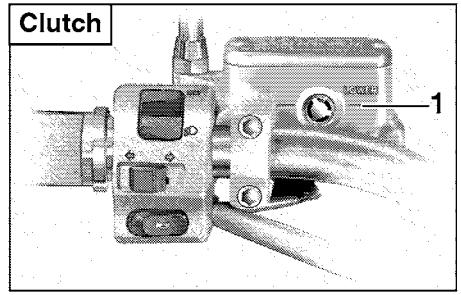
Each rear brake pad is provided with a wear indicator groove, which allows you to check the brake pad for wear without having to disassemble the brake. To check the brake pad wear, check the wear indicator groove. If a brake pad has worn to the point that the wear indicator groove has almost disappeared, have a Yamaha dealer replace the brake pads as a set.



1. Minimum level mark



1. Minimum level mark



1. Minimum level mark

Checking the brake fluid level

Insufficient brake fluid may allow air to enter the brake or clutch systems, possibly causing them to become ineffective.

Before riding, check that the brake fluid is above the minimum level mark and replenish if necessary. A low brake fluid level may indicate worn brake pads and/or brake system leakage. If the brake level is low, be sure to check the brake pads for wear and the brake system for leakage.

Observe these precautions:

- When checking the fluid level, make sure that the top of the master cylinder is level by turning the handlebars.
- Use only the recommended quality brake fluid, otherwise the rubber seals may deteriorate, causing leakage and poor braking or clutch performance.

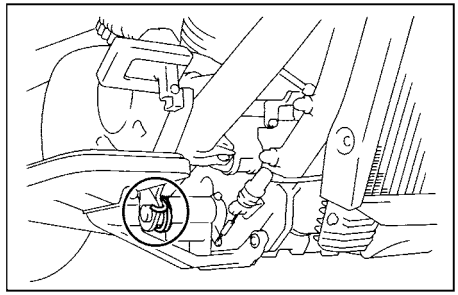
Recommended brake fluid: DOT 4

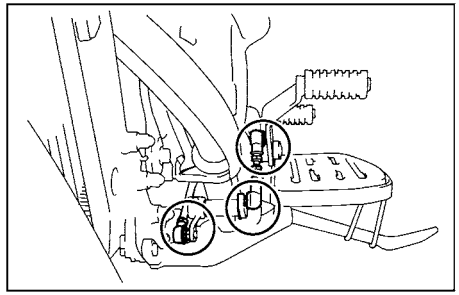
- Refill with the same type of brake fluid. Mixing fluids may result in a harmful chemical reaction and lead to poor braking or clutch performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.
- Brake fluid may deteriorate painted surfaces or plastic parts. Always clean up spilled fluid immediately.
- As the brake pads wear, it is normal for the brake fluid level to gradually go down. However, if the brake fluid level goes down suddenly, have a Yamaha dealer check the cause.

Changing the brake fluid

Have a Yamaha dealer change the brake fluid at the intervals specified in the periodic maintenance and lubrication chart. In addition, have the oil seals of the master cylinder and caliper as well as the brake hoses replaced at the intervals listed below or whenever they are damaged or leaking.

- Oil seals: Replace every two years.
- Brake hoses: Replace every four years.

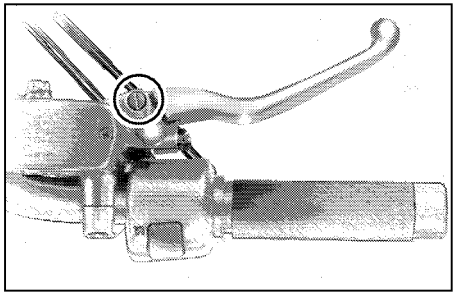


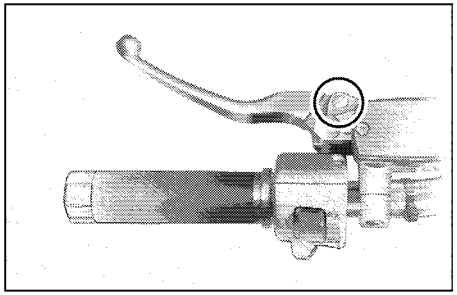


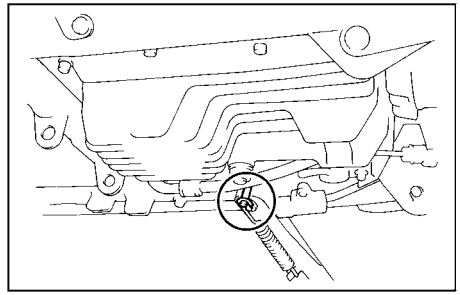
Checking and lubricating the brake and shift pedals

The operation of the brake and shift pedals should be checked before each ride, and the pedal pivots should be lubricated if necessary.

Recommended lubricant:
Lithium-soap-based grease
(all-purpose grease)







Checking and lubricating the brake and clutch levers

The operation of the brake and clutch levers should be checked before each ride, and the lever pivots should be lubricated if necessary.

Recommended lubricant:
Lithium-soap-based grease (all-purpose grease)

Checking and lubricating the sidestand

The operation of the sidestand should be checked before each ride, and the sidestand pivot and metal-to-metal contact surfaces should be lubricated if necessary.

⚠ WARNING

If the sidestand does not move up and down smoothly, have a Yamaha dealer check or repair it.

Recommended lubricant:
Lithium-soap-based grease
(all-purpose grease)

Checking the front fork

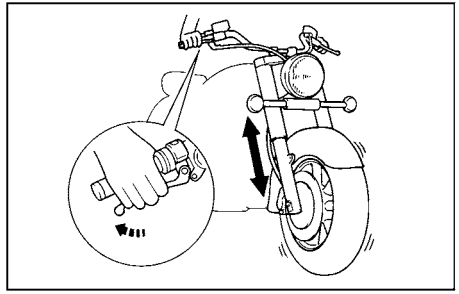
The condition and operation of the front fork must be checked as follows at the intervals specified in the periodic maintenance and lubrication chart.

To check the condition

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

Check the inner tubes for scratches, damage and excessive oil leakage.

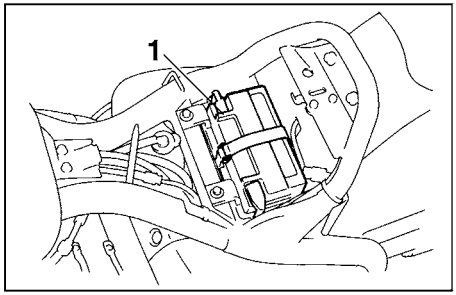


To check the operation

1. Place the motorcycle on a level surface and hold it in an upright position.
2. While applying the front brake, push down hard on the handlebars several times to check if the front fork compresses and rebounds smoothly.

CAUTION:

If any damage is found or the front fork does not operate smoothly, have a Yamaha dealer check or repair it.



1. Battery

Battery

This motorcycle is equipped with a sealed-type (MF) battery, which does not require any maintenance. There is no need to check the electrolyte or to add distilled water.

CAUTION:

Never attempt to remove the battery cell seals, as this would permanently damage the battery.

⚠ WARNING

- **Electrolyte is poisonous and dangerous since it contains sulfuric acid, which causes severe burns. Avoid any contact with skin, eyes or clothing and always shield your eyes when working near batteries. In case of contact, administer the following FIRST AID.**
  - **EXTERNAL: Flush with plenty of water.**
  - **INTERNAL: Drink large quantities of water or milk and immediately call a physician.**
  - **EYES: Flush with water for 15 minutes and seek prompt medical attention.**
- **Batteries produce explosive hydrogen gas. Therefore, keep sparks, flames, cigarettes, etc., away from the battery and provide sufficient ventilation when charging it in an enclosed space.**
- **KEEP THIS AND ALL BATTERIES OUT OF THE REACH OF CHILDREN.**

To charge the battery

Have a Yamaha dealer charge the battery as soon as possible if it seems to have discharged. Keep in mind that the battery tends to discharge more quickly if the motorcycle is equipped with optional electrical accessories.

To store the battery

1. If the motorcycle will not be used for more than one month, remove the battery, fully charge it, and then place it in a cool, dry place.
2. If the battery will be stored for more than two months, check it at least once a month and fully charge it if necessary.
3. Fully charge the battery before installation.
4. After installation, make sure that the battery leads are properly connected to the battery terminals.

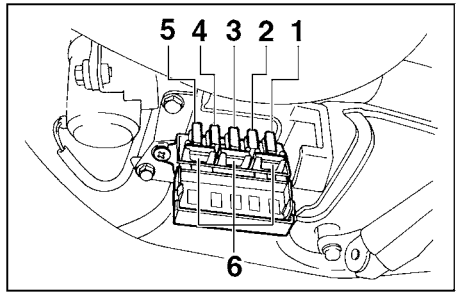
CAUTION:

- **Always keep the battery charged. Storing a discharged battery can cause permanent battery damage.**
- **To charge a sealed-type (MF) battery, a special (constant-voltage) battery charger is required. Using a conventional battery charger will damage the battery. If you do not have access to a sealed-type (MF) battery charger, have a Yamaha dealer charge your battery.**

Replacing the fuses

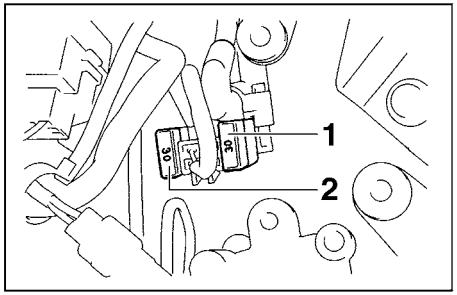
The main fuse box is located behind panel B. (See page 6-8 for panel removal and installation procedures.)
The fuse box, which contains the fuses for the individual circuits, is located behind panel A. (See page 6-7 for panel removal and installation procedures.)
If a fuse is blown, replace it as follows.

1. Turn the key to "OFF" and turn off the electrical circuit in question.
2. Remove the blown fuse, and then install a new fuse of the specified amperage.



1. Ignition fuse
2. Signaling system fuse
3. Headlight fuse
4. Radiator fan fuse
5. Odometer fuse
6. Spare fuse (× 3)

Specified fuses:	
Main fuse:	30 A
Ignition fuse:	10 A
Signaling system fuse:	10 A
Headlight fuse:	15 A
Radiator fan fuse:	10 A
Odometer fuse:	5 A

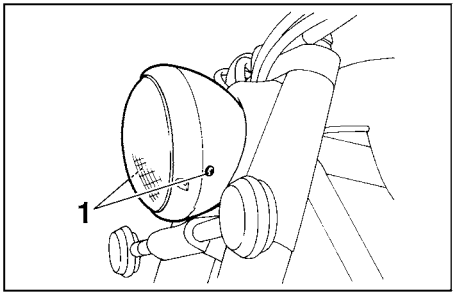


1. Main fuse
2. Spare main fuse

CAUTION:

Do not use a fuse of a higher amperage rating than recommended to avoid causing extensive damage to the electrical system and possibly a fire.

3. Turn the key to "ON" and turn on the electrical circuit in question to check if the device operates.
4. If the fuse immediately blows again, have a Yamaha dealer check the electrical system.

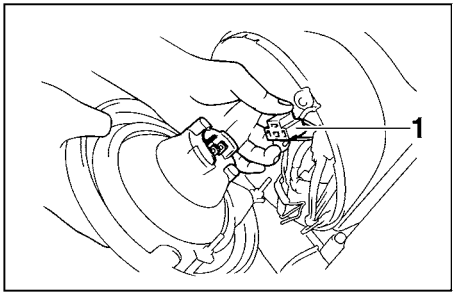


1. Screw (× 2)

Replacing the headlight bulb

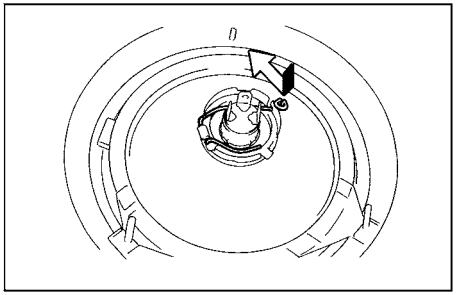
This motorcycle is equipped with a quartz bulb headlight. If the headlight bulb burns out, replace it as follows.

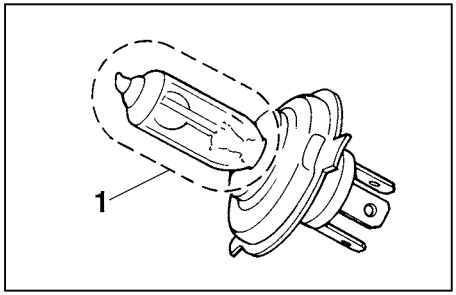
1. Remove the headlight unit by removing the screws.



1. Headlight coupler

2. Disconnect the headlight coupler, and then remove the headlight bulb cover.





1. Do not touch this area.

3. Unhook the headlight bulb holder, and then remove the defective bulb.

⚠ WARNING

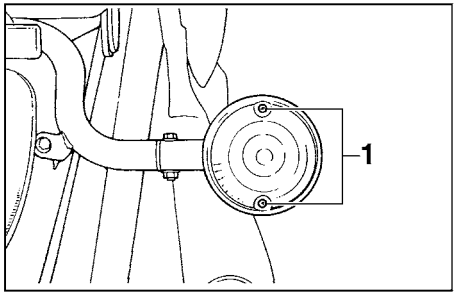
Headlight bulbs get very hot. Therefore, keep flammable products away from a lit headlight bulb, and do not touch the bulb until it has cooled down.

4. Place a new bulb into position, and then secure it with the bulb holder.

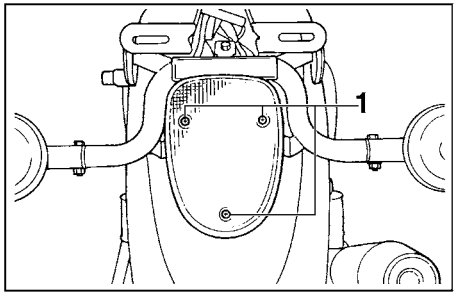
CAUTION:

Do not touch the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the luminosity of the bulb, and the bulb life will be adversely affected. Thoroughly clean off any dirt and fingerprints on the headlight bulb using a cloth moistened with alcohol or thinner.

5. Install the bulb cover, and then connect the coupler.
6. Install the headlight unit by installing the screws.
7. Have a Yamaha dealer adjust the headlight beam if necessary.



1. Screw (× 2)



1. Screw (× 3)

Replacing a turn signal light bulb or the tail/brake light bulb

1. Remove the lens by removing the screws.
2. Remove the defective bulb by pushing it in and turning it counterclockwise.
3. Insert a new bulb into the socket, push it in, and then turn it clockwise until it stops.
4. Install the lens by installing the screws.

CAUTION:

Do not overtighten the screws, otherwise the lens may break.

Troubleshooting

Although Yamaha motorcycles receive a thorough inspection before shipment from the factory, trouble may occur during operation. Any problem in the fuel, compression, or ignition systems, for example, can cause poor starting and loss of power.

The following troubleshooting charts represent quick and easy procedures for checking these vital systems yourself. However, should your motorcycle require any repair, take it to a Yamaha dealer, whose skilled technicians have the necessary tools, experience, and know-how to service the motorcycle properly.

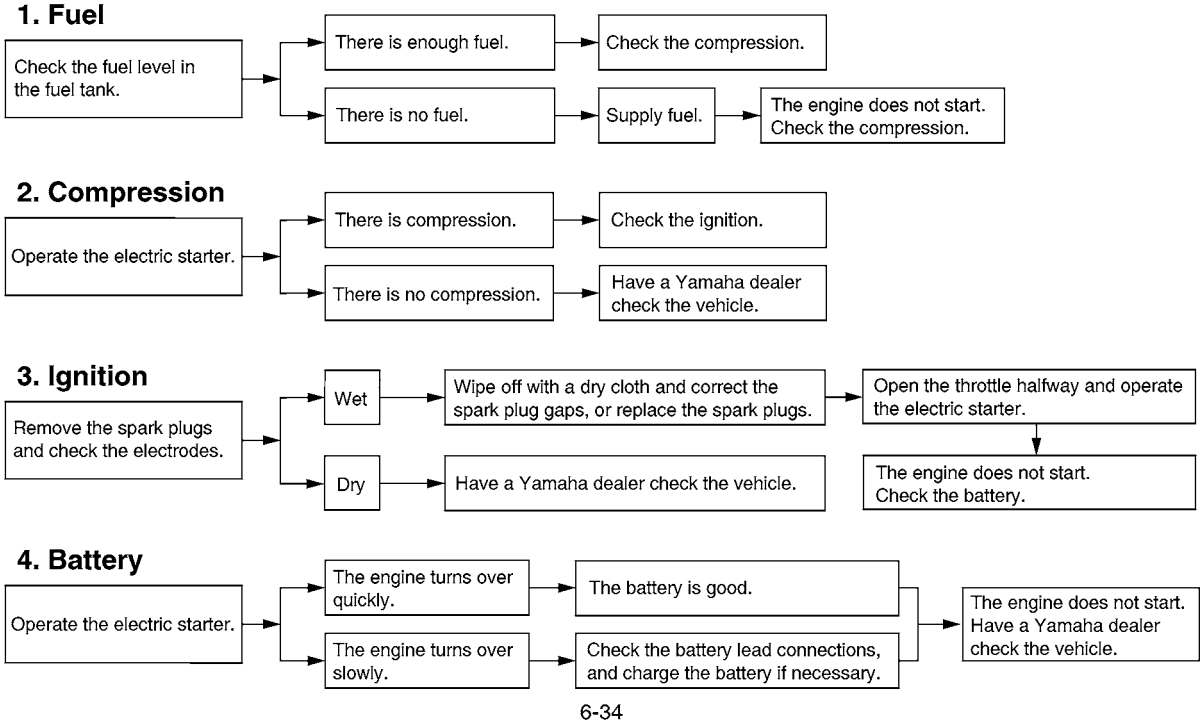
Use only genuine Yamaha replacement parts. Imitation parts may look like Yamaha parts, but they are often inferior, have a shorter service life and can lead to expensive repair bills.

Troubleshooting charts

Starting problems or poor engine performance

⚠ WARNING

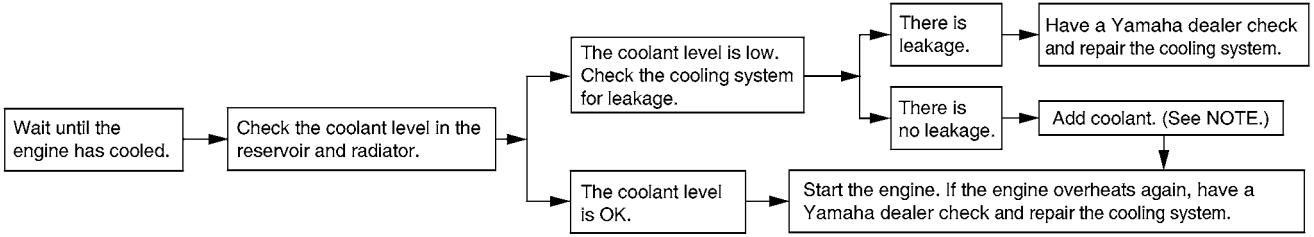
Keep away open flames and do not smoke while checking or working on the fuel system.


1. Fuel
Check the fuel level in the fuel tank.
There is enough fuel.
Check the compression.
There is no fuel.
Supply fuel.
The engine does not start. Check the compression.
2. Compression
Operate the electric starter.
There is compression.
Check the ignition.
There is no compression.
Have a Yamaha dealer check the vehicle.
3. Ignition
Remove the spark plugs and check the electrodes.
Wet
Wipe off with a dry cloth and correct the spark plug gaps, or replace the spark plugs.
Open the throttle halfway and operate the electric starter.
The engine does not start. Check the battery.
Dry
Have a Yamaha dealer check the vehicle.
4. Battery
Operate the electric starter.
The engine turns over quickly.
The battery is good.
The engine does not start. Have a Yamaha dealer check the vehicle.
The engine turns over slowly.
Check the battery lead connections, and charge the battery if necessary.

Engine overheating

⚠ WARNING

- **Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. Be sure to wait until the engine has cooled.**
- **After removing the radiator cap retaining bolt, place a thick rag, like a towel, over the radiator cap, and then slowly rotate the cap counterclockwise to the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning it counterclockwise, and then remove the cap.**


Wait until the engine has cooled.
Check the coolant level in the reservoir and radiator.
The coolant level is low. Check the cooling system for leakage.
There is leakage.
Have a Yamaha dealer check and repair the cooling system.
There is no leakage.
Add coolant. (See NOTE.)
The coolant level is OK.
Start the engine. If the engine overheats again, have a Yamaha dealer check and repair the cooling system.

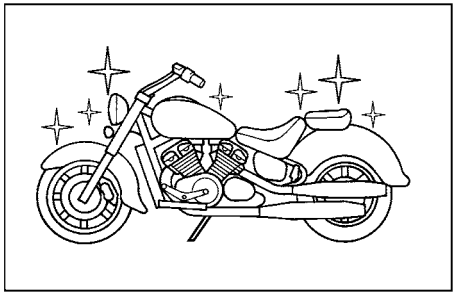
NOTE:

If coolant is not available, tap water can be temporarily used instead, provided that it is changed to the recommended coolant as soon as possible.

CLEANING AND STORAGE

Cleaning 7-1
Storage 7-2

CLEANING AND STORAGE



Cleaning

Frequent, thorough cleaning of your motorcycle not only enhances its appearance, but also improves its performance and extends its life.

CAUTION:

- **Improper cleaning can damage the windshield, cowlings, panels and other plastic parts. Use only a soft, clean cloth or sponge with mild detergent and water to clean plastic. If the windshield is scratched, use a quality plastic polishing compound after washing.**
- **Do not use any harsh chemical products on plastic parts. Make sure to avoid using cloths or sponges which have been in contact with strong or abrasive cleaning products, solvent or thinner, fuel (gasoline), rust removers or inhibitors, brake fluid, antifreeze or electrolyte.**

Before cleaning the motorcycle

1. Cover the muffler outlets with plastic bags and strong rubber bands, to prevent water entry.
2. Make sure that the spark plugs and all caps and covers are properly installed.
3. Apply Yamaha Mud and Grease Release or another high-quality degreaser to the crankcase, to remove any excessive grease, with a paintbrush. Do not apply degreaser to the wheel axles.

Cleaning the motorcycle

1. Rinse any dirt and degreaser off with a garden hose, using only enough pressure to do the job.

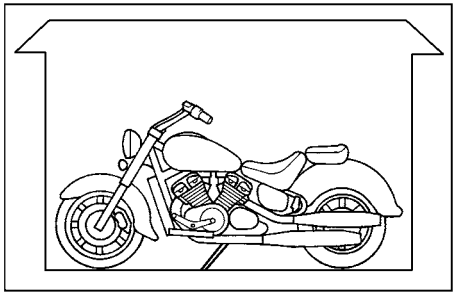
CAUTION:

- **Excessive hose pressure may cause water seepage and deterioration of wheel bearings, the front fork, brakes, transmission seals and electrical parts.**
- **Many expensive repair bills have resulted from improper high-pressure detergent applications such as those available in coin-operated car washers.**

2. Once the majority of the dirt has been hosed off, wash all surfaces (except the leather saddlebags) with warm water and a mild detergent. Use a toothbrush or bottle-brush to get into those hard-to-reach places.
3. Rinse the motorcycle off immediately with clean water and dry all surfaces with a chamois, clean towel, or soft absorbent cloth.
4. Clean the seat with Yamaha Protectant or another high-quality vinyl upholstery cleaner to keep the cover pliable and glossy.

After cleaning the motorcycle

Apply Yamaha Silicone Wax or another high-quality automotive-type wax on all painted and chrome-plated surfaces. Avoid combination cleaner-waxes, since many contain abrasives that may mar the paint or protective finish. When finished, start the engine and let it idle for several minutes.



Storage

Long term storage (60 days or more) of your motorcycle will require some preventive measures to guard against deterioration. After the motorcycle has been thoroughly cleaned, prepare it for storage as follows:

1. Fill the fuel tank with fresh fuel and add the following amount of Yamaha Fuel Conditioner and Stabilizer or another high-quality fuel stabilizer:
   1 fluid oz per gallon or 7.5 ml per liter
   Operate the engine for several minutes to insure the newly conditioned fuel enters the entire fuel system and carburetors.

NOTE:

Use of Yamaha Fuel Conditioner and Stabilizer eliminates the need to drain the fuel system. If necessary, have a Yamaha dealer drain the fuel system.

2. Remove the spark plugs and pour about one tablespoon of SAE 10W-30 or SAE 20W-40 engine oil in each spark plug bore. Install the spark plugs and ground the spark plug leads to prevent sparking while turning the engine over several times to coat the cylinder walls with oil.

⚠ WARNING

To prevent sparking, make sure to remove the spark plug leads and ground them before using the starter motor to crank the engine.

3. Lubricate all control cables.

NOTE:
Use a Yamaha Power Cable Luber and Yamaha Lube Zall or another high-quality equivalent to pressure-lubricate the cables and to purge out any moisture between the inner and outer cables.

4. Block the frame up so that both of its wheels are off the ground.
5. Cover the exhaust pipes with plastic bags to prevent moisture from entering them.
6. If storing in a humid or salt-air atmosphere, coat all exposed metal surfaces with a light film of oil. Do not apply oil to any rubber parts or the seat cover.
7. Remove the battery and fully charge it. Store it in a cool, dry place and charge it once a month. Do not store the battery in an excessively cold or warm place [less than 30 °F (0 °C) or more than 90 °F (30 °C)]. For more information on storing the battery, see page 6-29.

NOTE:
If necessary, make repairs before storing the motorcycle.

Specifications 8-1

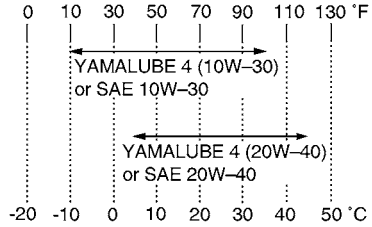
SPECIFICATIONS

Specifications

Model	**XVZ13A**
Dimensions	
Overall length	97.6 in (2,480 mm)
Overall width	37.4 in (950 mm)
Overall height	45.7 in (1,160 mm)
Seat height	28.1 in (715 mm)
Wheelbase	66.7 in (1,695 mm)
Ground clearance	5.9 in (150 mm)
Minimum turning radius	133.9 in (3,400 mm)
Basic weight (with oil and full fuel tank)	728 lb (330 kg)
Engine	
Engine type	Liquid-cooled 4-stroke, DOHC
Cylinder arrangement	V type, 4-cylinder
Displacement	1,294 cm^3
Bore × Stroke	3.11 × 2.60 in (79 × 66 mm)
Compression ratio	10:1
Starting system	Electric starter
Lubrication system	Wet sump

Engine oil

Type



Recommended engine oil classification	API Service SE, SF, SG type or higher

CAUTION:

Be sure to use motor oils that do not contain anti-friction modifiers. Passenger car motor oils (often labeled "ENERGY CONSERVING II") contain anti-friction additives which will cause clutch and/or starter clutch slippage, resulting in reduced component life and poor engine performance.

Quantity

Without oil filter cartridge replacement	3.7 US qt (3.1 Imp qt, 3.5 L)
With oil filter cartridge replacement	3.9 US qt (3.3 Imp qt, 3.7 L)
Total amount dry engine	4.6 US qt (3.8 Imp qt, 4.3 L)

Final gear oil		
Type		Hypoid gear oil SAE 80 (API GL4) or multigrade hypoid gear oil SAE 80W-90
Quantity		0.21 US qt (0.18 Imp qt, 0.2 L)
Cooling system capacity (total amount)		3.1 US qt (2.6 Imp qt, 2.9 L)
Air filter		Dry type element
Fuel		
Type		Unleaded fuel
Fuel tank capacity		4.8 US gal (4.0 Imp gal, 18 L)
Fuel reserve amount		0.9 US gal (0.8 Imp gal, 3.5 L)
Carburetor		
Manufacturer		MIKUNI
Model × quantity		BDS28 × 4
Spark plug		
Manufacturer/model		NGK / DPR7EA-9 or DENSO / X22EPR-U9
Gap		0.03–0.04 in (0.8–0.9 mm)
Clutch type		Wet, multiple-disc
Transmission		
Primary reduction system		Spur gear
Primary reduction ratio		1.666
Secondary reduction system		Shaft drive
Secondary reduction ratio		2.566
Transmission type		Constant-mesh, 5-speed
Operation		Left foot
Gear ratio		
	1st	2.437
	2nd	1.578
	3rd	1.160
	4th	0.906
	5th	0.750
Chassis		
Frame type		Double cradle
Caster angle		30°
Trail		5.0 in (126 mm)
Tires		
Front		
Type		Tubeless tire
Size		150/80-16 71H
Manufacturer/model		Bridgestone / G705
		Dunlop / D404F
Rear		
Type		Tubeless tire
Size		150/90B15M/C 74H
Manufacturer/model		Bridgestone / G702
		Dunlop / D404

Maximum load*	448 lb (203 kg)
Tire air pressure (measured on cold tires)	
Up to 198 lb (90 kg)*	
Front	36 psi (2.50 kgf/cm^2, 250 kPa)
Rear	36 psi (2.50 kgf/cm^2, 250 kPa)
198 lb (90 kg)–maximum*	
Front	36 psi (2.50 kgf/cm^2, 250 kPa)
Rear	41 psi (2.80 kgf/cm^2, 280 kPa)

* Total weight of rider, passenger, cargo and accessories

Wheel

Front	
Type	Cast wheel
Size	16 × MT 3.50
Rear	
Type	Cast wheel
Size	15M/C × MT 4.00

Brakes

Front	
Type	Dual disc brake
Operation	Right hand
Fluid	DOT 4
Rear	
Type	Single disc brake
Operation	Right foot
Fluid	DOT 4

Suspension

Front	Telescopic fork
Rear	Swingarm (link suspension)

Spring/shock absorber

Front	Coil-air spring / oil damper
Rear	Coil spring / gas-oil damper

Wheel travel

Front	5.5 in (140 mm)
Rear	3.7 in (95 mm)

Electrical

Ignition system	T.C.I. (digital)
Charging system	
Type	A.C. magneto
Standard output	14 V, 23 A @ 5,000 r/min
Battery	
Model	YTX20L-BS
Voltage, capacity	12 V, 18 Ah
Headlight type	Quartz bulb (halogen)

Bulb voltage, wattage × quantity

Headlight	12 V, 60/55 W × 1
Tail/brake light	12 V, 8/27W × 1
Front turn signal/ position light	12 V, 27/8W × 2
Rear turn signal light	12 V, 27 W × 2
Meter lighting	14 V, 1.4 W × 2
Neutral indicator light	12 V, 1.7 W × 1
High beam indicator light	12 V, 1.7 W × 1
Turn signal indicator light	12 V, 1.7 W × 1
Oil level warning light	12 V, 1.7 W × 1
Fuel level warning light	14 V, 3 W × 1
Coolant temperature warning light	12 V, 1.7 W × 1
Overdrive indicator light/ Engine trouble warning light	12 V, 1.7 W × 1

Fuses

Main fuse	30 A
Ignition fuse	10 A
Signaling system fuse	10 A
Headlight fuse	15 A
Radiator fan fuse	10 A
Odometer fuse	5 A

Identification numbers 9-1
Key identification number 9-1
Vehicle identification number 9-1
Model label 9-2
Reporting safety defects 9-3
Motorcycle noise regulation 9-4
Maintenance record 9-5
ROYAL STAR™ WARRANTY GUIDE 9-7

CONSUMER INFORMATION

Identification numbers

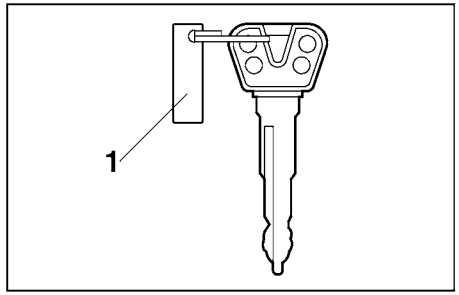
Record the key identification number, vehicle identification number and model label information in the spaces provided below for assistance when ordering spare parts from a Yamaha dealer or for reference in case the vehicle is stolen.

1. KEY IDENTIFICATION NUMBER:

2. VEHICLE IDENTIFICATION NUMBER:

3. MODEL LABEL INFORMATION:

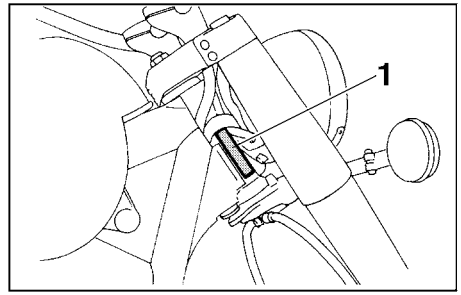
○
●



1. Key identification number

Key identification number

The key identification number is stamped into the key tag. Record this number in the space provided and use it for reference when ordering a new key.



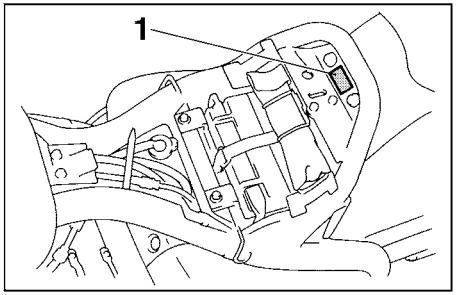
1. Vehicle identification number

Vehicle identification number

The vehicle identification number is stamped into the steering head pipe. Record this number in the space provided.

NOTE:

The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your area.



1. Model label

Model label

The model label is affixed to the frame under the seat. (See page 3-10 for seat removal and installation procedures.) Record the information on this label in the space provided. This information will be needed when ordering spare parts from a Yamaha dealer.

CONSUMER INFORMATION

Reporting safety defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Yamaha Motor Corporation, U.S.A. If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Yamaha Motor Corporation, U.S.A.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

Motorcycle noise regulation

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED:

Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

"AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW".

These acts include tampering with the following systems; i.e., modification, removal, etc.

Exhaust system	Muffler Exhaust pipe Silencer
Intake system	Air cleaner case Air cleaner element Intake duct

Maintenance record

Copies of work orders and/or receipts for parts purchased and installed on your motorcycle will be required to document that maintenance has been completed in accordance with the emissions warranty. The chart below is printed only as a reminder that maintenance work is required. It is not acceptable proof of maintenance work.

Maintenance interval	Date of service	Mileage	Servicing dealer name and address	Remarks
600 mi (1,000 km) or 1 month				
4,000 mi (7,000 km) or 6 months				
8,000 mi (13,000 km) or 12 months				
12,000 mi (19,000 km) or 18 months				
16,000 mi (25,000 km) or 24 months				
20,000 mi (31,000 km) or 30 months				
24,000 mi (37,000 km) or 36 months				

Maintenance interval	Date of service	Mileage	Servicing dealer name and address	Remarks
28,000 mi (43,000 km) or 42 months				
32,000 mi (49,000 km) or 48 months				
36,000 mi (55,000 km) or 54 months				
40,000 mi (61,000 km) or 60 months				

ROYAL STAR™ WARRANTY GUIDE

Yamaha Motor Corporation, U.S.A. hereby warrants that each new Yamaha Royal Star/ Royal Star Tour Classic motorcycle purchased from an authorized Yamaha motorcycle dealer in the continental United States will be free from defects in material or workmanship for the period of time stated herein, subject to certain stated limitations.

THE PERIOD OF WARRANTY for the Yamaha Royal Star/ Royal Star Tour Classic, including windshield, saddlebags, and mounting hardware installed as original equipment, shall be five (5) years from the date of purchase, regardless of mileage.

MODELS EXCLUDED FROM WARRANTY include those used for non-Yamaha-authorized renting, leasing, or other commercial purposes.

DURING THE PERIOD OF WARRANTY any authorized Yamaha motorcycle dealer will, free of charge, repair or replace any part adjudged defective by Yamaha due to faulty workmanship or material from the factory. Parts used in warranty repairs will be warranted for the balance of the product's warranty period. All parts replaced under warranty become property of Yamaha Motor Corporation, U.S.A..

GENERAL EXCLUSIONS from this warranty shall include any failures caused by:

a. Competition or racing use.
b. Installation of parts or accessories that are not qualitatively equivalent to genuine Yamaha parts.
c. Abnormal strain, neglect, or abuse.
d. Lack of proper maintenance or storage.
e. Accident or collision damage.
f. Modification to original parts.
g. Damage due to improper transportation.

SPECIFIC EXCLUSIONS from this warranty shall include:

1. The cost of parts and labor for routine maintenance or normal wear and tear. Examples include periodic oil changes and lubrication, filter cleaning and replacement, spark plugs, tune-ups, coolant, and brake and clutch adjustments.
2. Battery deterioration caused by improper maintenance and/or storage.

THE CUSTOMER'S RESPONSIBILITY under this warranty shall be to:
Operate and maintain the Royal Star/ Royal Star Tour Classic as specified in the appropriate Owner's Manual, and Give notice to an authorized Yamaha motorcycle dealer of any and all apparent defects within ten (10) days after discovery, and make the machine available at that time for inspection and repairs at such dealer's place of business.

WARRANTY TRANSFER

To transfer the warranty from the original purchaser to any subsequent purchaser, it is imperative that the machine be inspected and registered for warranty by an authorized Yamaha motorcycle dealer. In order for this warranty to remain in effect, this inspection and registration must take place within ten (10) days after transfer of ownership to the subsequent purchaser. A reasonable dealer-imposed fee may be charged for the inspection.

EMISSIONS CONTROL SYSTEM WARRANTY

Yamaha Motor Corporation, U.S.A. also warrants to the ultimate purchaser and each subsequent purchaser of each Royal Star/ Royal Star Tour Classic that the vehicle is designed, built, and equipped so as to conform at the time of sale with all U.S. emissions standards applicable at the time of manufacture, and that it is free from defects in materials and workmanship which would cause it not to meet these standards for 18, 642 miles (30,000 km) or five years, whichever occurs first. Failures other than those resulting from defects in material or workmanship which arise solely as a result of owner abuse and/or lack of proper maintenance are not covered by this warranty.

YAMAHA MOTOR CORPORATION, U.S.A. MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY YAMAHA MOTOR CORPORATION, U.S.A. AND EXCLUDED FROM THIS WARRANTY.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. ALSO EXCLUDED FROM THIS WARRANTY ARE ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LOSS OF USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

YAMAHA MOTOR CORPORATION, U.S.A.
Post Office Box 6555
Cypress, CA 90630

WARRANTY QUESTIONS AND ANSWERS

Q. What costs are my responsibility during the warranty period?
A. The customer's responsibility includes all costs of normal maintenance services, non-warranty repairs, accident and collision damage, and oil, oil filters, air filters, spark plugs, and brake shoes or pads.

Q. What are some examples of "abnormal" strain, neglect, or abuse?
A. These terms are general and overlap each other in areas. Specific examples include: Running the machine out of oil, sustained high-rpm, full-throttle use; operating the machine with a broken or damaged part which causes another part to fail; damage or failure due to improper or careless transportation and or tie down; and so on. If you have any specific questions on operation or maintenance, please contact your dealer for advice.

Q. Does the warranty cover incidental costs such as towing or transportation due to a failure?
A. No. The warranty is limited to repair of the machine itself.

Q. May I perform any or all of the recommended maintenance shown in the Owner's Manual instead of having the dealer do them?
A. Yes, if you are a qualified mechanic and follow the procedures specified in the Owner's and Service Manual. We do recommend, however, that items requiring special tools or equipment be done by Yamaha motorcycle dealer.

Q. Will the warranty be void or cancelled if I do not operate or maintain my new motorcycle exactly as specified in the Owner's Manual?
A. No. The warranty on a new motorcycle cannot be "voided" or "cancelled." **However, if a particular failure is caused by operation or maintenance other than as shown in the Owner's Manual, that failure may not be covered under warranty.**

Q. What responsibility does my dealer have under this warranty?
A. Each Yamaha Motorcycle dealer is expected to:
1. Completely set up every new machine before sale.
2. Explain the operation, maintenance, and warranty requirements to your satisfaction at the time of sale, and upon your request at any later date.

In addition, each Yamaha motorcycle dealer is held responsible for his setup, service and warrnaty repair work.

Q. Is the warranty transferable to second owners?

A. Yes. The remainder of the existing warranty can be transferred upon request. The unit has to be inspected and re-registered by an authorized Yamaha motorcycle dealer for the warranty coverage to remain effective.

CUSTOMER SERVICE

If your machine requires warranty service, you must take it to any authorized Yamaha motorcycle dealer within the continental United States. Be sure to bring your warranty registration identification or other valid proof of the original date of purchase. If a question or problem arises regarding warranty, first contact the owner of the dealership. Since all warranty matters are handled at the dealer level, this person is in the best position to help you. If you are still not satisfied and require additional assistance, please write:

YAMAHA MOTOR CORPORATION U.S.A.
CUSTOMER RELATIONS DEPARTMENT
P.O. Box 6555
Cypress, California 90630

When contacting Yamaha Motor Corporation, U.S.A. don't forget to include any important information such as names, addresses, model, V.I.N. (frame number), dates, and receipts.

CHANGE OF ADDRESS

The federal government requires each manufacturer of a motor vehicle to maintain a complete, up-to-date list of all first purchasers against the possibility of a safety-related defect and recall. This list is compiled from the purchase registrations sent to Yamaha Motor Corporation, U.S.A. by the selling dealer at the time of your purchase.

If you should move after you have purchased your new motorcycle, please advise us of your new address by sending a postcard listing your motorcycle model name, V.I.N. (frame number), dealer number (or dealer's name) as it is shown on your warranty identification, your name and new mailing address. Mail to:

YAMAHA MOTOR CORPORATION, U.S.A.
P.O. Box 6555
Cypress, California 90630
Attention: Warranty Department

This will ensure that Yamaha Motor Corporation, U.S.A. has an up-to-date registration record in accordance with federal law.

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PROTECT YOUR INVESTMENT

Use Genuine YAMAHA Parts And Accessories.

See your Authorized YAMAHA Dealer for a Genuine YAMAHA Service Manual.

YAMAHA

YAMAHA MOTOR CO., LTD.

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